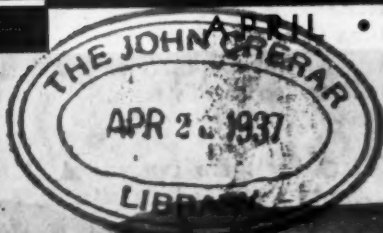


# Refrigeration Service Engineer

Vol. 5  
No. 4

696



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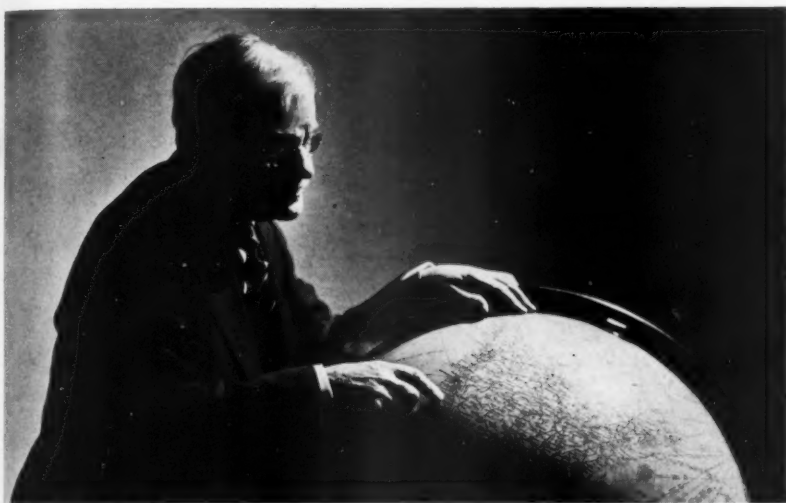
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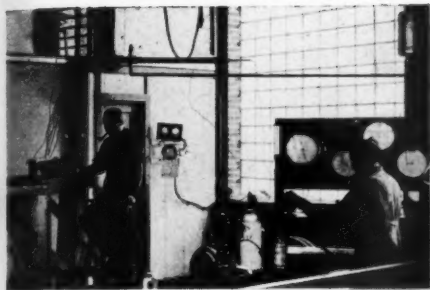
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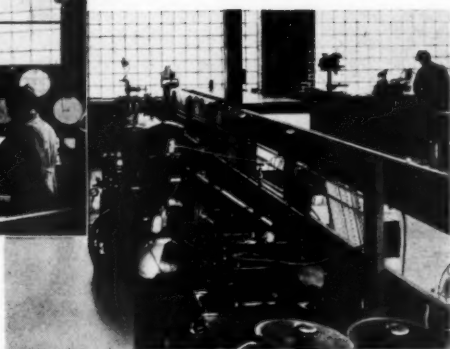
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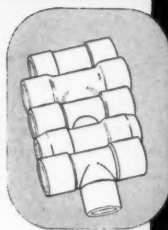
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April, 1937

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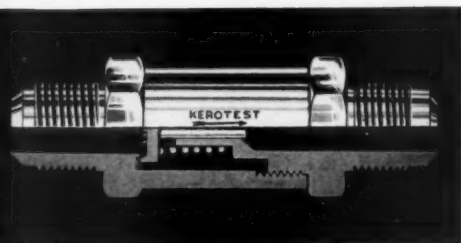
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# The Refrigeration Service Engineer

Vol. 5

No. 4

*April, 1937*

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# The Refrigeration Service Engineer

VOL. 5, No. 4

CHICAGO, APRIL, 1937

\$2.00 Per Annum

## *Determining Proper Machine Capacity* **The Ice Drip Test**

When converting ice to machine job, here is the method to calculate proper machine capacity

By L. K. WRIGHT, Mem. A.S.R.E.

IT happens that many jobs are conversions; that is, a machine unit is installed to take the place of ice. The service man is usually first to hear of the intention to make use of a refrigerating unit and this ice drip test can be used by him to estimate both machine and coil size. Many independent service men purchase machines which have been found too small to have a further load, such as additional counter or extra refrigerator, imposed on the condensing unit or get units from stores which move or go out of business. Proper overhauling of such equipment is essential.

The wide awake service man can make a handsome profit on such installations using overhauled equipment and being first on the job he does not have any competition to overcome.

A refrigerator load can be estimated by using data such as is given in the volume "Commercial Refrigeration."<sup>1</sup> Such estimates assume the insulation is sound, properly installed and dry. In some instances it will be found that a wall or ceiling may be poorly or improperly insulated. In such cases a wall or floor may be waterlogged. Obviously, such conditions will result in a higher load than that estimated. If possible,

and if discovered, such a box should be repaired or even relined.

Unfortunately, poorly applied insulation cannot be detected, for no prospective customer will permit the refrigerator to be drilled in dozens of places or ripped apart.

Where a refrigerator is in use and being cooled with ice it is a simple matter to obtain an accurate rating of the load by use of the ice drip test. This test will insure proper machine and coil size, a satisfied customer and will require no alterations after installation.

The ice drip test involves catching the drip for a specified time and weighing the amount of water, so that the weight of ice melted per day under actual working conditions can be computed. By taking the room or ambient temperature and the temperature within the refrigerator, the ice demand under different temperature differentials can be determined by simple proportion.

An ice box of uncertain origin or unknown insulation should be tested by the use of the ice drip method, as an accurate rating is had under full load conditions.

### **Determinations**

In obtaining data for the ice drip test, five determinations are required. They are:

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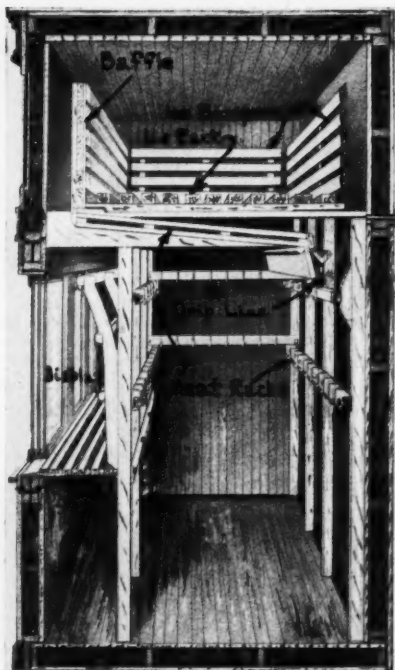


FIG. 1. WALK IN COOLER WITH ICE RACKS

1. Amount of ice melted in 30 minutes.
2. Refrigerator temperature.
3. Ambient temperature.
4. Temperature expected in the refrigerator with mechanical refrigeration.
5. Ambient or room temperature during warmest summer period.

#### Ice Drip

The ice meltage should be taken for a thirty-minute period. Do not use less, nor take a longer time. For a very careful test take three half-hour tests and take the average of the three.

To catch the drippage use an ordinary can or pail. Weigh it empty and then the weight of water caught will be the gain over this first weight.

In securing the drippage make sure all the water is caught. Most small boxes with single decks have but one drain line. Long, narrow boxes may have one deck but this deck may be pitched so that drippage runs to both ends of the deck. In such an event two buckets are needed, one under each drain at each end of the deck.

Larger boxes use two or more decks. While the drains are generally piped to a single drain line there are instances where individual drain lines are carried independently to the catch basin or basement drain. Check such jobs and make sure a bucket is under each drain. The total drippage must be secured.

#### Refrigerator Temperatures with Ice

The temperatures secured with ice vary with the room or ambient temperatures. On cold days a lower box temperature will be secured than on warmer occasions.

#### Room or Ambient Temperature

Ambient, meaning surrounding, is a term coming into general use for stating the temperature of the room in which the refrigerator is located. The outside temperature is generally assumed the ambient. Outside temperatures are arbitrarily predicated upon a rough geological location; viz.: northern states being assigned 80 degrees, central 90 degrees, and southern 100 degrees F. Some locations, such as the Mississippi valley region and along the Texas border should use 110 degrees F. Other sections having a high altitude may well be given a lower temperature than their general geological location. This should be checked by reference to governmental or city data.

#### Temperatures with Mechanical Refrigeration

Many customers, or prospects, request a low temperature, without being aware of just why he wants it. It is well to explain that the standard temperatures indicated in the chart give the maximum food preservation at minimum operating cost.

The following table includes data chosen by the Joint Refrigerating Committee of the Refrigerating Machinery Association and Commercial Refrigerator Manufacturers as standard, careful research leading to the selection of the various temperatures.

A "small market box" would be one of a size up to and including 8 ft. by 8 ft. A box larger than this would automatically fall into the large category.

On walk-in boxes the thermometer reading is taken at the center of the back wall, such as marked X on the illustration.

#### Example

Assume a large market is to be equipped with mechanical refrigerating equipment. For a thirty-minute period 20 lbs. of water

TABLE OF TEMPERATURES  
RECOMMENDED FOR NORMAL, AVERAGE CONDITIONS

REFRIGERATOR	LOCATION OF THERMOMETER	TEMP. °F.
Small Market Box	Center of Rear Wall	38 to 45
Large Market Box	Center of Rear Wall	36 to 42
Grocer's Box	Small Lower Compartment	42 to 48
Restaurant Service Box	Small Lower Compartment	42 to 48
Restaurant Storage Box	Center of Rear Wall	38 to 45
Florist Box	Center of Rear Wall	48 to 54

was caught. If time is available and a very close check is desired three tests can be made, taking the average meltage of the three half-hour periods.

The refrigerator temperature will be taken as 52 degrees F. and the ambient or room temperature as 76 degrees F.

Thus, for these conditions the test temperature differential is secured:

From.....Room or ambient temperature  
Subtract...Refrigerator temperature  
To get.....Temperature difference.

The temperature differential under the specified conditions is:

$$76 - 52 = 24 \text{ degree differential.}$$

If the meltage per one-half hour was 20 pounds, meltage per hour would be:  $20 \times 2 = 40$  pounds per hour.

For a 24 hour period (one day) the total meltage would be  $24 \times 40 = 960$  pounds per day, under standard load per 24 degree differential.

For a one degree differential the meltage per day would be found by dividing the meltage by the temperature differential; thus:  $960 \div 24 = 40$  pounds ice meltage per day of 24 hours under one degree temperature differential.

Machine conditions will be assumed to be 90 degrees F. ambient and 40 degrees F. refrigerator. The temperature differential for such operation would be  $90 - 40 = 50$  degrees T.D.

The total load with a 50 degree temperature differential would be  $40 \times 50 = 2,000$  pounds ice meltage per 24 hours.

If desired the problem may be shortened by the following formula:

$$\frac{\text{Ice Meltage per 24 hours} \times \text{Machine Temperature Differential}}{\text{Test temperature differential}}$$

Test temperature differential

$$960 \times 50$$

This would result as:  $\frac{960 \times 50}{24} = 2,000$

24

pounds.

SERVICE ENGINEER

### Machine Size

From the data the load per 24 hours under peak conditions is secured. This was found to be 2,000 pounds and it may be called the I.M.E. (ice melting effect). Some machines are rated in tons, others in pounds I.M.E. The machine required for this particular job would be one having a rating of 2,000 pounds I.M.E. or a one-ton unit. Machines listed in tons infer that they will give the same refrigerating effect as the same number of tons of ice at 32 degrees F.

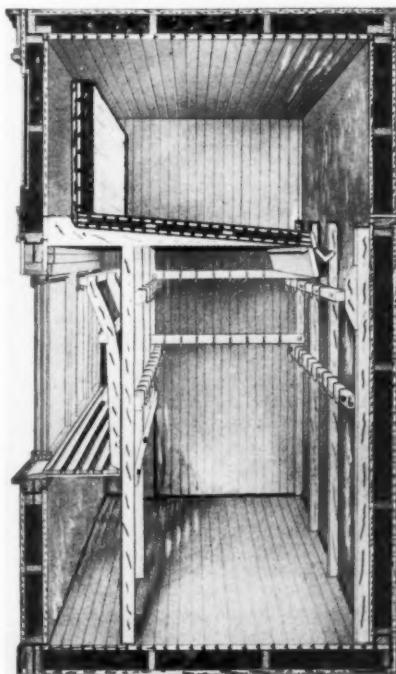


FIG. 2. WALK IN COOLER WITH ICE RACKS REMOVED

melting to water at 32 degrees F. Thus, a two-ton machine does not weigh two tons, nor will it make two tons of ice. As a matter of interest it is general to rate a ton machine as capable of only making about .6 of a ton of ice. This is due to the fact that the sensible heat must first be removed from the water to be frozen and also due to the heat load entering the freezing tank through the insulation. A one-ton machine will therefore do the same refrigerating work one ton of ice is capable of producing in melting from ice to water at 32 degrees F., the machine being operated for 24 hours.

As it is not advisable to operate machine continuously some shorter operating period must be chosen. Many organizations prefer to use an 18 hour operating period out of the 24. Some use 14, others 16. The fewer the number of hours the machine is to operate the larger the unit required. The 18 hour period is an excellent one to use, for it does give some leeway in having 6 more hours to operate if an unusually high load is imposed, at the same time it makes use of a small sized machine.

Assuming that only a 16 hour operating period be selected, the machine (and coil) size is determined as:

24

—  $\times 2,000 = 3,000$  pound. I.M.E.

16

or  $1\frac{1}{2}$  ton machine.

A twelve hour operating period would necessitate:

24

—  $\times 2,000 = 4,000$  pounds I.M.E.

12

or 2 ton unit.

Coils are selected in the same manner as given for determining unit size. The length of coil or coils must be checked—first, for entry in box and second, proper length. Some times two or more coils can be fitted somewhat better than a single coil. This can be determined by reference to the coil manufacturer's specifications. Coil and machine size must be identical for best results.

#### Conversions

It is important to have proper baffling and decking in a refrigerator when converting an ice job to mechanical refrigeration. Both baffle and deck should be insulated and ducts be properly proportioned to assure correct convection circuits in the refrigerator.

Fig. 1 shows a walk-in cooler with the

cooling chamber provided with ice rack and bumpers. Such a job can be easily converted for mechanical refrigeration. The removal of the ice rack and bumpers is all that is required, although an insulated baffle will give better satisfaction.

The baffle can be removed and replaced by a properly insulated affair or the original baffle can be left in place and built up as desired. Applying a lining of odorless waterproof insulation paper and about an inch of some standard insulation, covering the insulation with waterproof paper and a  $\frac{7}{8}$  inch tongue and groove (matching) wood, will provide an excellent baffle. This construction is shown in Fig. 2.

Decks should be insulated preferably with a  $1\frac{1}{2}$  inch blanket material, enclosed in waterproof paper. The deck can be lined with galvanized sheet or a drip pan can be placed on the deck, after installation of the deck.

If the deck and baffle is not insulated moisture will deposit and drip on the stored goods.

§ § §

### KELVINATOR DEVELOPS PRACTICAL UNIT FOR PASSENGER BUS AIR CONDITIONING

A PRACTICAL air conditioning unit for motor coaches has been built by Kelvinator. It is installed in a White research coach which is now making a three months' demonstration tour throughout the South.

The research coach is named the "Lord Kelvin Coach" in honor of the famous British physicist who founded the science of thermodynamics upon which modern air conditioning and refrigeration are based.

The air conditioning unit was engineered and constructed by the Kelvinator Division of Nash-Kelvinator Corporation. It is built into a deluxe streamlined coach, constructed by the White Motor Company, which contains the most modern innovations of passenger bus construction.

Powered by a White six-cylinder engine, designed primarily for long distance high speed trunk line operations, the research coach offers perfect riding comfort for passengers. The filtered, cooled and dehumidified air is changed completely once every three minutes. The wide roomy seats are equipped with reclining backs and a lever control that moves the seat forward and

lowers the back simultaneously, thus allowing the passengers more space for complete relaxation.

The Lord Kelvin Coach is capable of sustained operation of greater than 600 miles per day and of an operating speed of 55 miles per hour. It travels five and a half miles on a gallon of gasoline. The new coach accommodates twenty-nine passengers and a driver.

The air conditioning system is the only one of its kind, the first thoroughly perfected unit designed exclusively for coach service. Outside air, brought in and cooled by the unit, passes through ducts built into the luggage racks directly above the seats and running the length of the coach on both sides. The air is forced downward from these compartments onto a mushroom horizontal deflector which circulates the cooling air in such a manner as to envelop the passengers indirectly, without the discomfort of cold air drafts.

The outside air enters at the front of the body and is immediately conveyed to the air conditioning unit at the rear, where it is thoroughly filtered to remove dust and dirt, cooled to a comfortable temperature and dehumidified.

The equipment operates continuously. Power for both the refrigerant compressor and the fan for air circulation is accomplished through belt drive from a gasoline engine, designated as the "Power Unit."

The power unit operates continuously at constant speed. The loading of this engine is fully constant and varies with the demand for cooling. When the bus comfort temperature is satisfied, the thermostat breaks the circuit to liquid solenoid valve. This stops circulation of the refrigerant to the cooling coil. Since the refrigerant compressor operates continuously, it eventually pumps all the refrigerant back through the air cooled condenser to the liquid refrigerant receiver.

During this operation the suction pressure continues to drop and eventually reaches a stage where the low-pressure cut-out closes the circuit to the by-pass solenoid valve. This opens the by-pass circuit, equalizing the head and suction pressure on the compressor, and accordingly reduces the load on the engine to a minimum. During this off cycle, the gasoline engine continues to operate at reduced load until cooling is again called for. Then the refrigeration cycle is automatically re-established.

In the event of excessive head pressure, the high pressure cut-out automatically opens, causing the liquid solenoid valve to close and the cycle continues identically as described under thermostatic control.

The hand switch in the circuit of the by-pass solenoid valve is manually closed prior to starting of the power unit in order to unload the compressor while cranking the engine.

A second hand switch is provided for grounding the magneto when it is desired to stop the gasoline engine.

Demand for efficient ventilation and cooling of buses is not new. Makeshift experiments have been tried in various sections of the country in the past. The present demonstration tour will be used for experimental purposes with representatives of the Kelvinator Division of Nash-Kelvinator Corporation and the White Motor Company accompanying the coach as observers.

Production of the air conditioned units is scheduled for fall.

## \$\$\$ SERVICE MEN SHOULD SELL SERVICE!

By THOMAS COYLE

Reprinted from *Artic Service News*

ACCORDING to current estimate, there are in use today in the United States over 7,000,000 household and 1,500,000 commercial electric refrigeration units. Each of these installations represents potential business for the refrigeration service engineer. In other words, there are about 8½ million electric refrigerators which within the next few years probably will be increased to 10,000,000, all of which at one time or another should be serviced.

### Merchandising Sells Refrigerators

Merchandising created the large number of customers for refrigeration service. The householder, the butcher, the grocer and other users of electric refrigeration didn't just ask somebody to put in a refrigerator. They were sold electric refrigeration. They took the automatic unit out of the luxury class, sold it to the public as an essential in housekeeping, storekeeping, etc. They have set a fast-selling pace in the last 10 years and they are still at it—creating new customers for refrigeration service. But the service man hasn't kept pace with the manufacturers! He hasn't and probably won't until he learns to sell or merchandise refrigeration service.

### Why Depend on the Householder to BUY Service?

Right now, service engineers are in a better position to get business than they were 10 or even 5 years ago. They know more about refrigeration. They have more experience, have access to far more technical information about refrigerants and refrigerators. There's more business in sight. There's more opportunity to develop profitable service. There's plenty of business, but the service man is getting only a very small part of it, because he's not SELLING service. He's waiting for somebody to BUY it.

With few exceptions, there is very little systematized effort to sell a Refrigeration Service. This is not a reflection on the service man but a general statement of present conditions in the industry. It was true of the automobile and radio industries when they were young—when people sought service rather than as at present, when service is sold. In these fields, there is conclusive evidence that selling or merchandising service is the best and perhaps the only way to establish a profitable and stable business, one which can grow and develop with a growing industry.

The refrigerating service engineer, too, should sell his services. His knowledge about refrigerators, what ails them and how to cure these ailments, what to do about making them operate efficiently, etc., are his stock in trade. His task, obviously, is to tell the public what he has to offer. But how many service men do? Most of them wait for a call to do a repair job. Many of them have the idea that it would not pay to spend time and money to try to build up business. As a matter of fact, it would not—if done in a haphazard way. What is required is a systematized program.

#### Ice Is a Sale of "Service"

Consider the iceman. He is a service man in every sense of the word, and the refrigeration service engineer could well borrow some of the features of his methods. The iceman has his route, i.e., a number of established outlets to which he may be able to sell ice daily or every other day, as it may be required. His ice is "service" for the icebox, for it provides the necessary cooling. Essential to the conduct of his business are a few simple but effective merchandising efforts. There are ice cards for the customers to display so that he can tell where and how much ice (service) is needed. He goes about his route sighting and filling service calls,

and at times he yells "Ice!" as his wagon ambles along. He is not overlooking any opportunities to sell his services; doesn't leave it to chance for a possible customer, even in the third floor rear, to miss his service. On cool days his yells may be even louder, more persuasive. His customers don't buy ice—he sells it to them.

The service engineer doesn't have to travel a route and yell "Service!" There are other and more dignified methods, such as are employed in selling other services. And yet there are many service men not even listed in the telephone directory! Although important, that is only the first step in merchandising such a service.

Remember there are about 8,500,000 electric refrigerators in this country. Most of the automatic units are well-designed, well-built pieces of equipment, and with ordinary care may run for years without any trouble. Nevertheless, the machine has not yet been developed or built which will run forever without any attention. Refrigerators are machines. They have moving parts to which many things, some time or other, may happen. The average home owner knows little or nothing about his electric refrigerator. When it works, he is satisfied. He doesn't know when, for perhaps a slight reason, the operating cost is running too high. When the refrigerator stops working, he calls in the service man. Sometimes the fault can be determined at once, but often a time-consuming check-up is required. The bill comes in and the home owner complains. Here, then, is the proper place to sell service—the sort of protective service, or insurance against operation failure. With a little education the owner of an electric refrigerator can be taught that the time to consider the service man is not when the machine breaks down, but the whole year round, to see that his machine operates properly at all times.

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Norman Dorau  
New York

Your magazine is really a great help to me. It's not too technical so that I can't understand it, and yet it really tells how and what to do.

Ben Morris,  
Minnesota.

Appreciate your magazine and can't do without it for a single month.

## *Additional Sales Build Profits*

# Replacing Door Gaskets

Are you taking advantage of making additional profit? Take for example—door gaskets. The market for replacement is enormous. Here is an opportunity for extra profit on your service calls.

By R. K. BISHOP \*

THE most difficult thing for every businessman to get is customers. Service dealers in the refrigeration field are no exception. Like every other businessman they are forever crying: "Customers, customers, give us customers!" "How can I increase my volume?" is the problem of every dealer. Successful advertising and personal solicitation campaigns have brought amazing results. Many dealers are finding that it is good merchandising to increase business by getting more business from present customers—to insist that servicemen repair a refrigerator 100 per cent. Accessories and parts that "may last a few months longer" are being replaced before they, through inefficiency, cost the consumer too much money and while the serviceman is in a position to do a real selling job.

An Akron service dealer, discussing the problem of increasing sales states, "The average serviceman, except in high emotion, will not exert himself beyond the line of least resistance. We must continually 'pep up' our servicemen; get them all excited and keep them going at a fast pace, for they can and do increase our business with comparative ease, simply by telling our customers that they need a new door gasket, fan belt or any other part that is badly worn. Thus, we bolster our sales without additional expense."

Service dealers who are not already using it can easily outline a program that is simple, practical and will immediately bring results in increasing sales; a plan that can be started at once without expense. Let us start with a single item and see just how the possibilities of a carefully planned program unfold.

Between the cabinet and door faces of every refrigerator there is placed a hollow tubular rubber gasket. The necessity of replacing this part is often overlooked or

ignored and as a result gives us an ideal part around which to start our program. The rubber door gasket is an essential part of the refrigerator. It prevents the entry of warm air into the cabinet. Now since the space in which this gasket is placed usually measures  $\frac{1}{8}$  inch to  $\frac{3}{16}$  inch any tendency of this gasket to flatten, become torn or lose its ability to resist compression results in an inrush of warm air and a corresponding decrease in the efficiency of the refrigerator. Emphasis is given the harmful results of defective gaskets when we consider that the removal of warm air from the refrigerator cabinet is the basis of mechanical refrigeration.

When giving consideration to the replacement of rubber door gaskets we immediately notice that there appears to be a great number of different shaped gaskets. The gaskets are primarily the same, each making use of a hollow tube to effect a seal, the principal difference being in the shape and size of the lip that serves as a means of attachment. Refrigerator manufacturers today either attach their door gaskets by tacking them in place or by slipping the projection on the gasket lip under the inner door pan. Despite the large number of gaskets that have appeared on refrigerators in the past ten years, the serviceman will find that less than twenty different types are required for the servicing of the millions of cabinets now in use. A simple section with a  $\frac{1}{4}$  inch tube height can be used to replace 75 per cent of the gaskets now in use. It may prove necessary to place a shim under the door hinge but the gasket will effectively seal the door.

Perhaps you are familiar with the potential market for replacement door gaskets. It has been conservatively estimated that one gasket of every four now in use should be replaced. Prior to September of last year over ten million refrigerators had been sold. Every gasket five or more years old

\* Sales Promotion Manager, Mechanical Sales Division, Miller Rubber Co., Akron, Ohio.



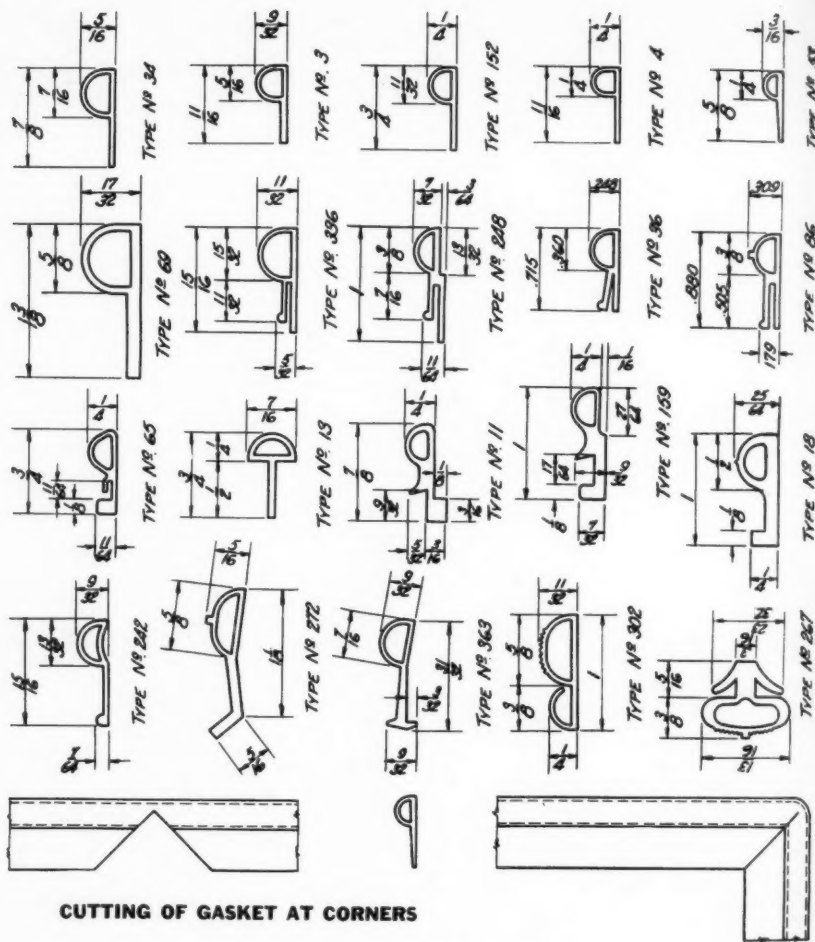


FIG. 1. TYPES OF DOOR GASKETS

should be examined carefully for defects and the desirability of its continued use.

Rubber gaskets are made with great care; when they are placed on a refrigerator they are mechanically perfect. Engineers have carefully designed a construction that will permit the door to close easily, yet the gasket must resist compression sufficiently to insure an efficient seal. The life of a rubber gasket is hard—compressed almost continuously it is expected to assume its original shape when the door is opened. The

constant flexing action, after several years use, tends to weaken the gasket. Housewives often form the habit of opening the refrigerator door by unlatching it and then gripping the door gasket—grease and butter-fats on their hands shorten the life of the rubber gasket. Please understand that the gasket manufacturers in most instances have spent many years in the development of grease and age resistant compounds but the best of materials do not last indefinitely.



TYPE NO 53  
TYPE NO 86  
TYPE NO 18  
TYPE NO 267

You can think of other items in your stock that like rubber gaskets afford almost limitless possibilities for the dealer to increase his business, if the importance of the part is properly conveyed to the refrigerator owner. Then too, dealers find that by recommending the replacement of parts that have outlived their usefulness they build up in the minds of their customers a feeling of dependability. A customer who

is convinced that his dealer is dependable will frequently influence his friends to the advantage of the dealer.

The flourishing business of replacing refrigerator parts will continue to increase. That the field is attractive is evidenced by the great many new dealers entering the business. More and more we must be certain that when the job is considered complete the consumer has everything necessary for the proper operation of his refrigerator.

## How to Build A Dehydrating Oven

Moisture is a big factor in refrigeration work. It is ever present. Proper dehydration is essential. Here is a practical way to construct a dehydrating oven for the shop

GEO. H. CLARK, \*B.S., M.E.

AMONG refrigeration service men who are discussing service problems, the problem of moisture in the refrigeration system seems to be always present. Moisture causes such a large part of our service difficulties that the matter of what to do about it is always interesting. We have in the past discussed from every angle the various drying methods in the field which consist in the use of dryers involving the use of a number of drying agents.

Whereas dryers are very much a necessary part of our service equipment, we can not overlook the fact that the best solution to moisture troubles lies in getting our systems as dry as possible in the first place. The majority of refrigeration machine manufacturers are doing their part in drying out their machines while some are still lax in this regard.

Most refrigeration accessory manufacturers also do their part in drying out their products and sealing them in shipment so as to eliminate moisture trouble.

In installing refrigerating systems, however, it is a physical impossibility to absolutely prevent moisture from getting into the system. The tubing may be dehydrated at its point of manufacture and sealed, but in installing a system the tubes must necessarily remain open for a short space of time

and some moisture which is ever present in the air enters the system with the air. Where the systems are evacuated and purged of air this moisture is largely eliminated so that little moisture is apt to be left in the system.

We know, however, that as a result of service troubles such as seal leaks, loose connections in a sweating or frosted part of our system, or leaks in other parts of our system, moisture may be drawn into our system.

In many cases this amount of moisture is so great that it is extremely troublesome in that acid reactions occurring when the refrigerant and moisture combine may cause our oils to break down and sludge, giving us considerable and consistently plugged screens, plugged valves, plugged lines and pitted valves. In extreme cases compressor stick-ups and seal and bearing failures are also attributable to this cause.

In service then, we may often find that a commercial, apartment house multiple, or even a household system may become involved in so much trouble resulting from moisture that dryers do not act quickly or thoroughly enough to take care of our needs. In such occasions it is often found advisable to remove the condensing unit and the evaporators and blow out the lines with a dry high pressure gas such as carbon dioxide.

A home made drying oven can be made

\* President, Detroit School of Refrigeration. Chairman, Educational and Examining Board, R.S.E.S.

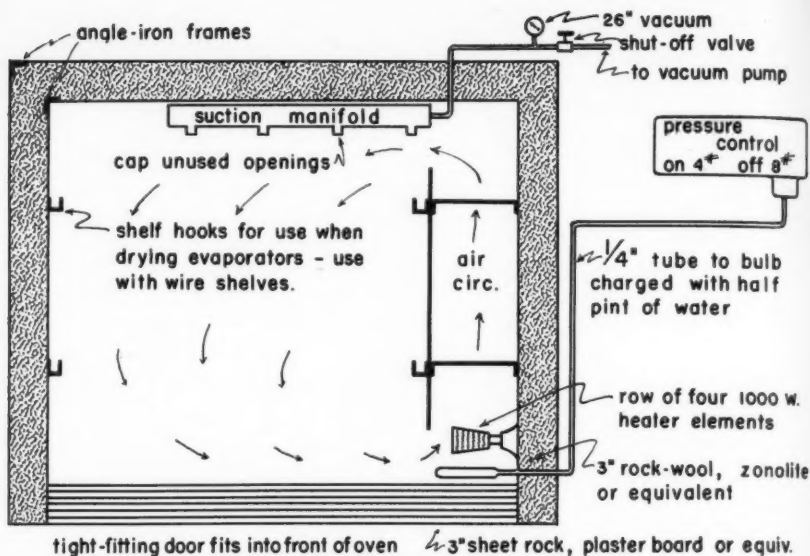


FIG. 1. CONSTRUCTION DETAILS FOR DRYING OVEN.

quite inexpensively which may be used to bake out the condensing unit and the evaporators. The chief requirements of such an oven are that the temperature should be controlled so as to be high enough to remove moisture readily and low enough to eliminate the possibility of opening soldered connections or spoiling gasket materials and various insulating or combustible materials used in the construction of the unit.

#### Heating Element

In general we may use either gas or electricity for a source of heat supply. The cost of heat is almost universally higher when we get it as electrical energy than it is when we get it from gas. However, we waste considerably more heat in using gas than we do when using electric heat.

When we use gas as in a gas oven, we burn our fuel and liberate heat as we combine our fuel and air. In utilizing the heat we have to circulate the burned gases by the material we wish to heat or if these gases may be harmful, we pass the hot gases by some surface which picks up the heat and passes it to the air surrounding the material to be heated. In this way it is necessary to waste a lot of heat in the gases which are exhausted or pass up the stack at high temperatures.

In heating by electricity, the heat is passed directly into the air in which the material to be heated is located. After the oven is heated up to its desired temperature, very little more heat is required—just enough to make up for heat leakage.

Electric heat can be controlled so easily also that it is very convenient to use. A temperature control for a dehydrating oven may be made from a pressure control and using a tube partly filled with water as a thermostatic bulb. A temperature of about 225 degrees is recommended and may be obtained by using a control setting of from 8 pounds on to 8 pounds off when using water as the thermostatic liquid.

The oven itself may be made from sheet iron and should consist of an inner and outer shell with an insulating material in between. A fairly well insulated wall may be obtained by the use of about three inches of mineral or rock wool or Zonolite or the equivalent. The bottom should be insulated with a comparatively solid material such as those of the plasterboard type. A baffle plate should be arranged so that the air circulates by the electric heaters into the main oven space.

In addition to baking condensing units and float type evaporators, a vacuum of 20 to 26 inches should be drawn on these parts

during the baking process to assure the complete removal of moisture.

Porcelain screw plug sockets are suggested to hold the screw base type of hot wire heaters such as are used in connection with the various radiant focusing type of electric heater. These heaters are usually obtainable in 660 and 1000 watt sizes. Four of the latter size should be sufficient to heat up a moderately sized oven in a comparatively short time.

At 110 volts, four 1000 watt heaters would draw about 36 amperes which is more than the plug type fuse is rated to carry. If a 220 volt circuit is available, the heaters may be connected two in series with the two pairs connected through the control switch. If a relay coil is available it should be used to carry the heavy current required by the heaters. This would be about 18 amperes at 220 volts.

The size of oven to be built will depend upon its use but it is suggested that an oven having an available floor space two feet wide by three feet long and three feet high will be big enough to put the usual size of a one-h.p. condensing unit in and

it would not be advisable to build a smaller oven than this.

A manifold with several openings for one-quarter inch tubes to be connected to the evaporators or condensing unit being dried. Externally the manifold will be connected to a vacuum pump which should be operated while the oven is in use.

The oven will be most convenient when a front door hinged at the top is used. In drying a condensing unit the procedure should be as follows:

1. Put unit in oven and connect vacuum line.
2. Heat to temperature of 225 degrees or from 215 to 235 degrees for a period of three hours while vacuum of 20 to 26 inches or more is maintained in unit.
3. After shutting off heat and opening oven, close valve before vacuum pump is stopped or line disconnected.
4. After removing unit give it a holding charge of the refrigerant it is to be used with; that is, charge it with refrigerant vapor to a pressure of 10 to 20 lbs gage.

The accompanying sketch shows some of the more important details of construction.

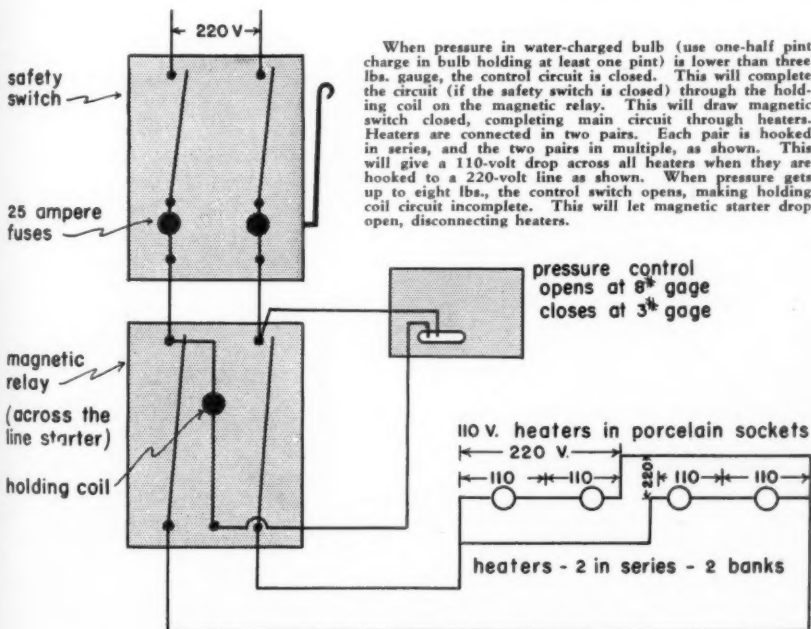


FIG. 2. WIRING DIAGRAM FOR DRYING OVEN.

## Second Article

# Air Conditioning

This article treats of the terms commonly used in air conditioning that the service man should know

By W. C. FARMINGDALE

**B**EFORE we can discuss how to install and service air conditioning apparatus, it is necessary that we all speak the same language. Hence, to start this series, we'll study definitions of the various terms used in air conditioning.

### Relative Humidity

Perhaps the most frequently used term in air conditioning is *relative humidity*. Since relative humidity plays as important a role in making a comfortable atmosphere at all seasons as does temperature, let us start by learning just what relative humidity is.

Humidity means moisture which is suspended in air. When we say, "The weather is very humid today," we mean that there is a lot of moisture in the air.

Air is a mixture of gases which expand and contract with changes in temperature. As the air expands, its ability to hold moisture increases and conversely when air is cooled its ability to hold moisture decreases.

*Relative Humidity* has to do with the ability of the air to hold moisture at various temperatures. It is defined as:

weight of water in one cubic foot of air at a certain temperature.

RELATIVE HUMIDITY =

weight of water that one cubic foot of air can hold at that temperature.

Absolute humidity is the actual weight of water in one cubic foot of air at a given time. This remains the same regardless of how the temperature and relative humidity change.

When a cubic foot of air is held at a fixed temperature, it can absorb a definite weight of water. If any excess water is present above the weight of the water which the air can absorb, the excess water will not be absorbed; it will merely lie in the bottom of the cubic foot container. Air in this condition is said to be saturated with moisture and has a *relative humidity of 100 per cent*. Air is said to have a *relative humidity of*

*100 per cent when it has absorbed all the moisture it can hold at that particular temperature.*

Now suppose that one cubic foot of air at 50° F. is saturated and has a relative humidity of 100 per cent. From the psychrometric chart (which will be explained later), we find that one cubic foot of air can hold 54 grains of moisture. Now suppose that this cubic foot of air is sealed in a container and heated to a temperature of 100° F. Since no moisture could leave or enter the container, the air must still contain 54 grains of moisture. From the psychrometric chart, we find that one cubic foot of air at 100° F. can hold 300 grains of moisture. The relative humidity of the air at 100° is then:

$$\text{R.H.} = \frac{54}{300} \times 100 = 18 \text{ per cent}$$

### Relationship of Relative Humidity to the Comfort of a Room

A human being's body is completely covered with small openings called pores. These pores are used all year round to give off waste material in the form of sweat or water vapor. Even in cold weather, these pores discharge minute quantities of water vapor. The amount of vapor given off by the pores depends upon 3 factors:

- 1—Temperature.
- 2—Relative humidity of air in the room.
- 3—The speed with which the air in the room is moving.

Let us continue our discussion of relative humidity and later come back to the other two factors which influence personal comfort.

So far from our study of relative humidity, we have learned that when relative humidity of air is 100 per cent, the air cannot absorb any more moisture. For the sake of illustration, suppose you are in a warm room whose relative humidity is 100 per cent. The pores on your body will want to throw off moisture but where can it go? The air can't absorb any of it. Your clothes will absorb

very little of it. Your pores can't get rid of their moisture and so the moisture collects in the form of sweat on your body and you experience that hot, muggy, listless feeling.

Now the speed with which the air will absorb moisture from your body varies with the relative humidity of the air in that particular room. When the relative humidity is high, moisture will not evaporate rapidly from your skin and if there is no air movement and the temperature is high, you feel hot and muggy. When the relative humidity is low, moisture evaporates rapidly from your skin and even at a high temperature and with little or no air movement, you may feel uncomfortable or even cold.

#### Dry Air Actually Seeks Out Moisture

When the relative humidity is very low (about 10-20 per cent), the air will actually seek out moisture and will take it from every source it can locate. On a cold winter day, the relative humidity in a heated room is very low unless moisture has been artificially added to the air in that room.

Just why is the relative humidity of a heated room very low on a cold day? To find the answer, consider the following example:

Suppose the outdoor air is at  $+10^{\circ}$  F. and has a relative humidity of 100 per cent. From the psychrometric chart, we find that one cubic foot of air at  $10^{\circ}$  F. and 100 per cent R.H. contains 10 grains of moisture. Now this air is heated in a room to say  $80^{\circ}$ . What is its R.H. at  $80^{\circ}$ ? From the psychrometric chart we find that one cubic foot of air at  $80^{\circ}$  F. can hold 156 grains of moisture. However, we know that the air contains only 10 grains of moisture per cubic foot. Hence, the R.H. is

weight of water in one cubic foot of air.

$$\text{R.H.} = \frac{\text{weight of water one cubic foot of air can hold at that temperature.}}{10 \times 100}$$

$$\text{R.H.} = \frac{156}{1000} = 6.4 \text{ per cent}$$

The relative humidity rarely gets this low in the average home because water vapor is given off by cooking, by people breathing and by various other sources. However, it is not uncommon to find a relative humidity as low as 20 per cent.

Extremely low R.H.'s are found very often in homes equipped with a pipeless furnace, in which the owners, either through neglect or ignorance, fail to keep the water

chamber filled. You have all been in one of these homes at sometime. You've no doubt noticed how the furniture had come apart, how the covers of books had dropped away from the reading matter, how doors and window frames had shrunk. All these things happened because the R.H. of the room has been so low that the air actually sucked the moisture out of these objects in the room.

Many women blame winter for rough, chapped and dry skins, when the real cause of their trouble is the low R.H. in their homes. The air is so dry that it absorbs too much moisture from their skins, leaving them dry and rough.

Many colds are caused each year because people live in rooms in which the R.H. is too low. In these rooms, dry air is constantly passing through the moist passages in people's noses and throats. As a result, these passages are dried up and dry noses and throats cannot effectively filter germs out of the air.

These are pertinent facts which every air-conditioning service man should know. Situations will continuously arise where he has to explain what relative humidity is and how it affects the people and the objects in the room. When the R.H. is high (over 50 per cent) noses and throats do not dry out and furniture and book bindings do not fall apart.

#### A Low Relative Humidity Produces a Cooling Effect

In order to evaporate a liquid, heat must be applied to that liquid. For instance in order to change one pound of water into one pound of steam, 970 B.t.u.'s must be added to the water at  $212^{\circ}$  F. Similarly, in order to vaporize one pound of  $\text{SO}_2$  liquid in a cooling coil, 144 B.t.u.'s must be added to each pound of liquid  $\text{SO}_2$ .

Likewise, when waste water evaporates from a person's skin, a large amount of heat is required. The only place from which the water can get heat is from the person's body. Hence, evaporation must produce a cooling effect on the body. To satisfy yourself that evaporation does produce cooling, pour a little alcohol on the back of your hand. In a few minutes it will dry up and the back of your hand will feel cool, because in drying up (or in evaporating), the alcohol absorbed heat from your hand.

Now when the relative humidity in a room is low, your entire body will give up much

moisture to the room. Hence, you will feel cool, although the room temperature may be 80° or above. From this you can see that in winter time, a high relative humidity will enable you to feel comfortable in a 70° room. Hence, there will be no need of heating the room higher than 70°. This means that a high relative humidity will actually save fuel in winter. In summer time, a low R.H. will enable you to feel comfortable even though the temperature of the room is above 80° F.

It is of extreme importance that the air-conditioning service man know and understand the above statement because perhaps 30 per cent of the service calls on summer conditioning are caused by customers expecting their air conditioning equipment to pull down the room temperature to about 70°. On these calls, the service man then has to be able to show the customer that although the temperature of the room is above 80°, the room is comfortable. In order to convince the customer, the service man will often have to explain how the conditioning unit is removing moisture from the air and is thus lowering the relative humidity in the room and allowing the customer's body to lose heat to the room.

#### Methods of Adjusting Relative Humidity

In summertime, the air conditioning equipment is used to reduce the R.H. in the conditioned rooms. This is accomplished by using a refrigeration cooling coil over which the air to be conditioned is passed. When a refrigerating machine is used to cool the coil, the cooling coil (unlike those used in commercial refrigeration) is not permitted to frost. The refrigerant temperature is seldom allowed to fall below 35° F. This means that with F-12, the back pressure should rarely fall below 35 pounds.

Let's see the exact mechanism of how air is dehumidified by the refrigeration method. Suppose we have a room at 80° F. and a relative humidity of 90 per cent; also suppose that the fins on our cooling coil are maintained at 45° (the refrigerant temperature inside the coil is maintained at 35°). From the psychrometric chart we find that one pound of 80° air can hold 155 grains of moisture. Since the relative humidity in our room is 90 per cent, a pound of air in this room will hold  $.9 \times 155 = 139.5$  grains of moisture. Now we are going to pass this pound of air through the fins of the cooling coil where it will be cooled to 45°. (For this discussion, let's assume that the whole

pound of air will be cooled to 45°.) From the psychrometric chart we find that one pound of air at 45° can hold only 44 grains of moisture. Hence, the pound of air will deposit

$139.5 - 44 = 95.5$  grains of moisture on the coil. Now as the pound of air leaves the conditioner, it mixes with warm room air, its temperature is raised and as a result its ability to hold moisture is increased. It then absorbs moisture from the rest of the room air and it is ready to be passed through the conditioner again. This procedure continues until the relative humidity is reduced to the desired percentage.

A second method of dehumidification is briefly described here because it is used on large installations. A number of cold water sprays are located in a chamber through which the conditioned air is made to pass. The warm air is cooled in passing through the cold spray mist and it loses some of its moisture to the mist. When the air is mixed with room air again, its temperature is raised and its relative humidity is reduced. Ordinarily, this method is not successful unless the water temperature is below 55° F.

In winter time, moisture must be added to the air in order to increase its R.H. This is generally accomplished by passing the air through a spray chamber similar to the one described above or by adding mist directly to the room air by means of a small centrifugal or spray atomizer. Then when the R.H. is low, the air quickly absorbs the mist so that there is no objectional dampness apparent in the room.

#### Dry Bulb and Wet Bulb Temperature

Two common terms used in air conditioning are dry bulb and wet bulb temperatures. Dry bulb temperature is the temperature recorded by an ordinary thermometer in a room.

The wet bulb temperature is the temperature recorded by a second thermometer, the bulb of which is wrapped in a wet rag. Room air is made to pass over this wet rag either by swinging the thermometer in the air or by squeezing a bellows which causes air to pass over the wet rag. Since evaporating water absorbs heat, the evaporation of water from the wet rag cools the thermometer bulb. As a result, the wet bulb thermometer reads a lower temperature than does the dry bulb. The rate at which the water can evaporate from the rag is governed by the relative humidity of the room.



Hence, from the wet and dry bulb temperatures, the relative humidity of the air can be calculated. The instrument used in measuring the wet and dry bulb temperatures simultaneously is called a psychrometer. A number of these instruments will be described in a later article, entitled "Air Conditioning Instruments."

### Dew Point

Dew Point is the temperature to which a cubic foot of air, under certain dry bulb and wet bulb conditions, has to be lowered before moisture will start to condense out

of that air. For instance, if a cubic foot of air at a 90° dry bulb temperature and at 60° wet bulb temperature is to be dehumidified, the temperature of the cooling coil fins will have to be at least 32° (as found from the psychrometric chart). If the cooling coil temperature is 33°, the air will be cooled but no moisture will be removed from it, and no moisture will collect on the fins of the coil. Now if the wet bulb temperature is 70° and the dry bulb temperature is still 90°, the dew point (from the psychrometric chart) is 59°. Hence in order to dry the air, the temperature of the fins of the cooling coil must be below 59°.

## Fifth Article

A. C. Motors

# Electronics for Servicemen

In this article we find out how alternating current motors operate.

By WALTER G. CHRISTIE, B.S.E.E.

IN chapter four in the March issue, we found out how alternating currents are generated. Now before shooting trouble in a. c. circuits, let's study how a. c. motors operate.

Today three types of a. c. motors are commonly used on refrigerators. They are:

1. Repulsion Induction
2. Capacitor Start—Induction Run
3. Polyphase

The repulsion-induction and the capacitor type motors are used on single phase circuits.

The capacitor type is used primarily on domestic jobs and is seldom used in sizes larger than  $\frac{1}{3}$  h. p. and generally can be used on only one voltage range, either 110 volts or 220 volts. So that if a 110 volt refrigerator equipped with a capacitor motor is to be used on a 208 volt circuit, the motor will have to be replaced by a 208 volt motor before the unit is connected to the 208 volt supply.

The repulsion-induction type of motor is used on both domestic and commercial refrigerators and varies in size from 1/10 h. p. to 5 h. p. Most repulsion induction motors used on refrigerators are wound so that four wires come out from the field windings. When the fields are connected in parallel (see Fig. 1), the motor can be used on 110 volt circuits. When the fields are connected

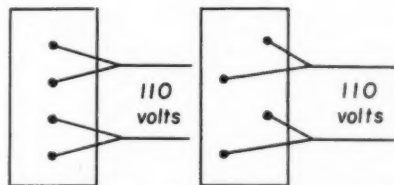


Fig. 1. Two styles of motor lead boxes on repulsion induction motors showing lead wires connected for operation on 110 volt circuits.

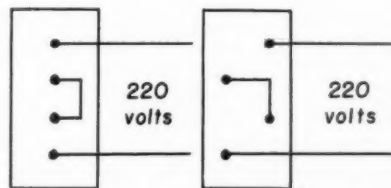


Fig. 1a. Showing 220 volt connection on the above lead boxes.

in series (see Fig. 1A), the motor can be used on 220 volt circuits.

However, in the past few years, the capacitor type motor has so gained in favor with the manufacturers, that at the present time it is used on about 90 per cent of the open type domestic refrigerator high sides.



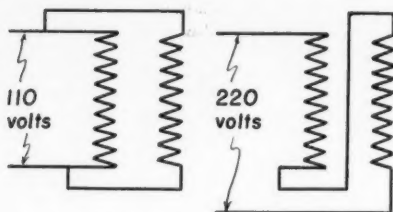


Fig. 2b. Showing internal connections of repulsion induction motor when lead wires are connected for 110 and 220 volt operation.

The capacitor motor has a number of advantages over the repulsion-induction motor among which are:

1. Fewer moving parts
2. Solid armature which eliminates a large percentage of motor burn-outs
3. Quieter operation at start and stop
4. Has no brushes to wear and cause radio interference

#### How A. C. Motors Are Built

The operation of all a.c. motors is concerned with two periods in the operating cycle:

1. Conditions inside the motor which enable it to start
2. Conditions inside the motor which enable it to keep operating after it has started

The simplest a. c. motor is the two phase motor. This consists of a laminated iron armature and of two separate field windings on the stator (frame) of the motor. The armature is made up of sheets of iron pressed together on the motor shaft. These sheets are held together at the outer edge by a number of copper bars which run through the laminations (or sheets) parallel

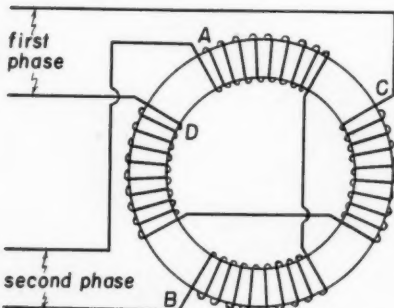


Fig. 2. Showing internal connections on fields of a two phase motor.

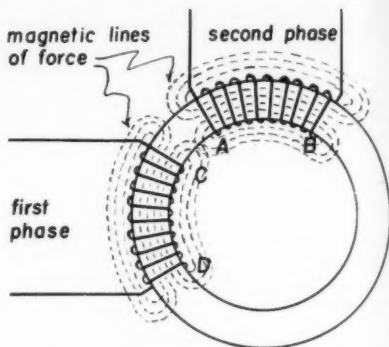


Fig. 3. For the sake of simplicity we will consider this diagram in studying magnetic forces in a two phase motor. Note that this diagram shows only one half of the full winding. The magnet field about A-B acts horizontally, while that about C-D acts vertically as shown by the dotted lines

to the motor shaft and which are soldered to a sheet of brass on either end of the armature. To a person unfamiliar with the construction of this armature, it would look like a solid iron cylinder which had been pressed on to the steel shaft. The two brass end sheets are painted a steel color and the copper bars are hidden by the laminations through which they pass. Article six will show why a. c. armatures are built this way.

#### The Revolving Field

All capacitor and polyphase a. c. motors depend upon a revolving magnetic field inside the motor frame to start the motor.

Since the two phase motor is the simplest type of motor, let us first study how it operates. Later we'll consider other types of motors. The following explanation holds for any polyphase motor and as will be pointed out, it also holds for the capacitor type single-phase motor.

The field of a two phase motor consists of two separate windings arranged so that they surround the entire periphery of the armature. The schematic diagram for this motor is shown in Fig. 2. When power is supplied to the two fields simultaneously, a strong magnetic field revolves in the air space between the frame of the motor and the armature. This magnetic field drags the iron armature around with it thus making the motor start.

However, if power is supplied to only one field, there will *not* be a revolving field within the motor and the motor will *not* start. The armature will vibrate and growl and the

field will burn out if the power is left connected for a very long time. A detailed description of why this happens is given in the following paragraph.

### Why the Armature Will Not Revolve When Only One Phase Is Energized

Let us consider Fig. 2 and suppose that 60 cycle power is supplied to only one motor

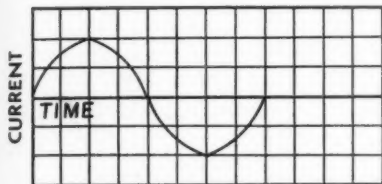


Fig. 4. Waveform single phase A.C.

phase, say to coil *A-B*. When current flows in *A-B*, a magnetic field will be set up around *A-B*. Now from chapter four, March issue, we know that this current is changing its direction 120 times each second (there are two changes in direction every cycle), and that this current is varying in strength

from zero to a maximum value and then back to zero. This is illustrated by the a. c. waveform in Fig. 4.

Since the current flowing through a coil is the agent which makes that coil a magnet, and since the strength of the magnetic field depends upon the amount or strength of the current flowing through the coil, and since the direction in which the magnetic field acts depends upon the direction of the current through the coil, the magnetic field waveform will be similar to the waveform of the a. c. current or similar to Figs. 4 and 5.

We can represent the strength and direction of the magnetic field surrounding coil *A-B*, by a series of straight lines. Let us represent the strength of the magnetic field by the length of the line. Let's work directly from Fig. 5. We'll make our line representing the strength of the field as long as the vertical height of the waveform at various time intervals. When the field acts in a positive direction (curve is above the time line in Fig. 5), let us draw the line to the right. When the field acts in the negative direction (curve is below the time line in Fig. 5) let us draw the line to the left. This form of representation is called by engineers

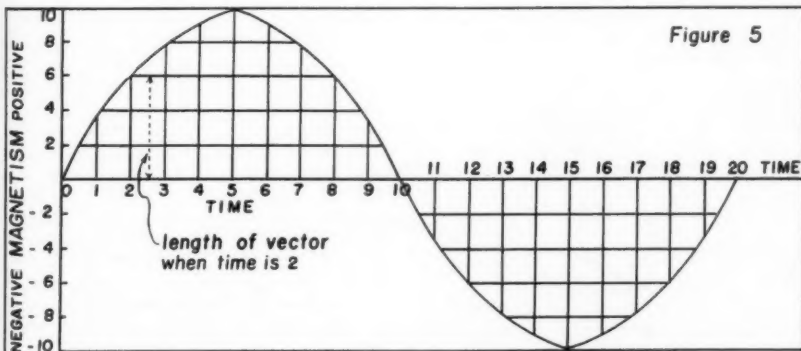


Table 5  
TIME

MAGNETISM

0	0
2	6
5	10
8	6
10	0
12	-6
15	-10
18	-6
20	0

Figure 5 A, vector diagrams.  
TIME

MAGNETISM

0	0
2	+6
5	+10
8	+6
10	0
12	-6
15	-10
18	-6
20	0

a vector diagram, and it gives an actual picture of what happens to the magnetic field when the current is varying in the coil. When the current flows from *A* to *B*, the magnetic lines of force flow from *A* to *B*. Then when the current reverses and flows from *B* to *A*, the magnetic lines of force reverse their direction and flow from *B* to *A*.

Thus when time is zero, magnetism is zero as represented by the dot in Fig. 5A. When time is 2, magnetism is 6 and the arrow points right. When time is 12, magnetism is -6, etc.

Thus getting back to our two phase motor to which one phase power is connected, the magnetism set up in coil *A-B* is varying as shown in the vector diagram of Fig. 5. That is, the magnetism first acts to pull the armature to the right. Then it tends to pull it to the left. This action occurs 120 times each second. Hence, the armature hasn't time to move very far before the direction of pull is changed. As a result, the armature can only vibrate. It cannot revolve.

#### A Problem in Forces

Before studying how the revolving field is obtained in a motor, let us digress for a moment and consider the following problem in forces:

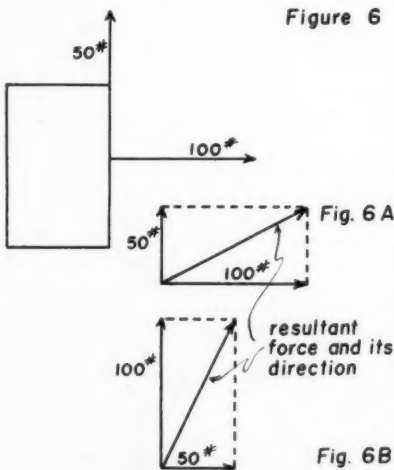


Fig. 6. A Problem in Force.

Suppose we have a heavy desk mounted on rollers and suppose we have two ropes hooked onto the desk as shown in Fig. 6. If one man takes hold of each rope and the

man at *A* pulls as indicated with a force of 50 pounds and the man at *B* pulls with a force of 100 pounds, how will the desk move and what will be the effective pull in pounds on the desk?

To solve this problem, we can make use of the vector diagram in Fig. 6A. The direction of the resultant force can be found by drawing the vector diagram as shown by the dotted lines in Fig. 6A. This will be the direction in which the desk will move. Now if the forces are reversed, in what direction will the resultant force act? The direction of the resultant force can again be found by drawing the vector diagram as in Fig. 6B. Notice that the length of the resultant force is the same, but its direction has changed.

#### The Revolving Field

Now to get back to the revolving field, let's consider the two phase field in Fig. 2. Coil *A-B* is connected to one phase and coil *C-D* to the other phase. As explained before, when power is applied to the field *A-B*, the magnetic field about *A-B* will start at zero build up to a maximum in a negative direction and then decrease to zero again.

Now refer to the vector representation of the magnetic field in *A-B* shown in Fig. 5A. A similar representation can be made of the magnetic field in coil *C-D*. Let us consider Fig. 7 and build a vector diagram for both field *A-B* and *C-D* from Fig. 7 and set down our data in a table such as 7A.

When we studied the problem on how the desk would move, we had two forces acting at right angles to each other. Now from Fig. 2 we see that coil *A-B* is at right angles to coil *C-D* and hence the magnetic field of *A-B* must act at right angles to the magnetic field of *C-D* as shown in Fig. 2A. So that when we set up our force diagram for the two fields, we must have one vector at right angles to the other as we did in the vector diagram of the desk. Let's place all vectors representing magnetism *A-B* horizontal. When the vectors are positive, we'll draw them to the right, when they're negative we'll draw them to the left. When vectors representing magnetism in coil *C-D* are positive we'll draw them upward, when they're negative we'll draw them downward.

Now let us assemble our force diagram as shown in Fig. 8. When time is zero, *A-B* is zero and *C-D* is -10. The result of these two magnetic forces then is just force

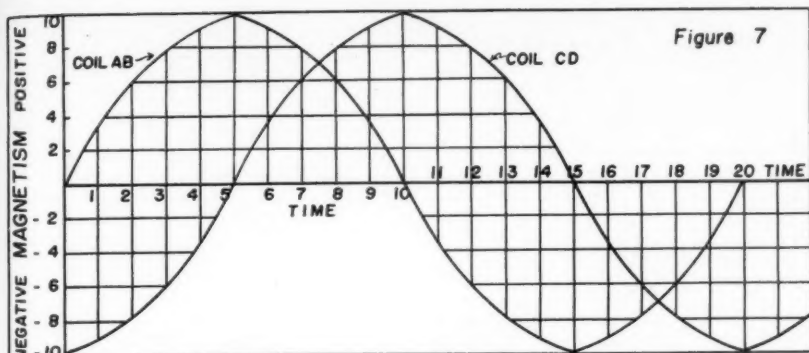


Table 7A

COIL AB		MAGNETISM	TIME	MAGNETISM	COIL CD	
- VECTOR	+				- VECTOR	+
.		0	0	-10	←	
→		+6	2	-8	←	
→		+10	5	0	.	
→		+6	8	+8	→	
.		0	10	+10	→	
←		-6	12	+8	→	
←		-10	15	0	.	
←		-6	18	-8	←	
.		0	20	-10	←	

C-D. When time is two  $A-B = +6$  and  $C-D = -8$ . Fig. 8 shows that the vector sum of these two forces is 10 and its direction is horizontal. When time is 10, the direction of the resultant force is vertical.

Figure 9 shows the resultant forces of the

vector diagrams in Fig. 8 all set in one diagram. From this diagram you can readily see that *when current flows in phases A-B and C-D simultaneously, the resultant magnetic field will be of constant strength and will revolve inside the motor frame.* This

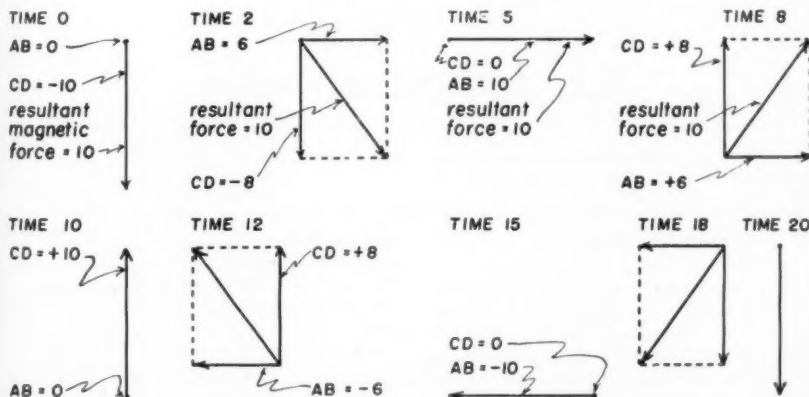


Fig. 8. Assembly of Force Diagram.

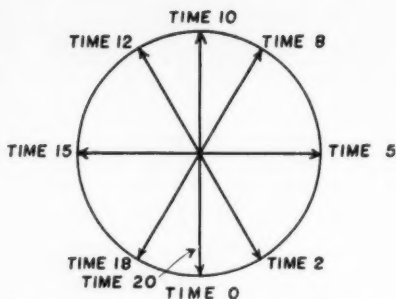


Fig. 9. Resultant Forces of Vector Diagrams in Fig. 8.

revolving field drags the iron armature around, thus making the motor start.

*The next article will continue on with a discussion of A. C. Motors before taking up Trouble Shooting on Polyphase Circuits.*

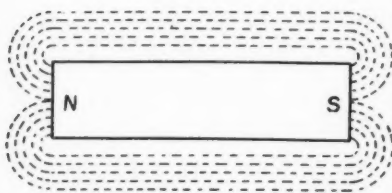
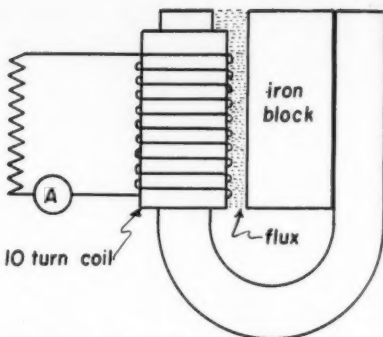


Fig. 1 reprinted from March issue. Surrounding every magnet are invisible lines of force which continually flow from the north pole of the magnet to the south pole of the magnet.

Fig. 2 is a corrected drawing of the corresponding illustration in the March issue, showing how a majority of lines of force travel through iron rather than through air as shown in Fig. 1 reproduced from the March issue. Since iron is a much better conductor of magnet lines than air, the number of magnetic lines of force will be increased about one thousand times over those in Fig. 1.



Corrected Drawing of Fig. 4. March issue. Showing ten turn coil cutting full flux of magnet. Fig. 4. Single wire of Fig. 3A, March issue, has been replaced by a ten turn coil. Voltage generated will be ten times that of Fig. 3A. If one thousand volts are generated across the coil, one ampere will follow through the resistor. When the coil is moved downward, the current will flow from A to B and when moved upward will flow from B to A.

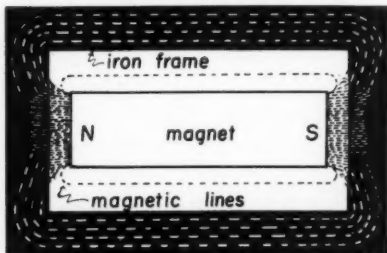


Fig. 2. Corrected from Drawing in March.

## The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating

equipment as well as oil burners to "The Question Box." The following questions are answered by Mr. George H. Clark.

### CARBON TROUBLE

QUESTION 188. *I am having trouble with a Copeland one h.p. air-cooled compressor in that it will form a heavy carbon deposit on the top of the pistons and valves in spite of the fact that I have changed oil and cleaned out compressor thoroughly. After cleaning out, it will run okay for some time; that is, three or four weeks, then another*

*cleanout will be necessary. This job is on an ice cream cabinet, and keeps a temperature of about 0 to -5 degrees.*

*What is the reason for this carbon, and what is the remedy? If you can help me in any way, it will be very greatly appreciated.*

ANSWER: The trouble which you describe seems to me must be due to moisture in the system or high temperatures in the com-

pressor or both, combined with a possible use of an improper oil. I believe the system should be cleaned out thoroughly throughout all the lines and compressor and condenser and that the whole system should be thoroughly dried. Then clean, fresh refrigeration oil should be used and dry refrigerant should be used. I would make very sure that there is no very small leak in the evaporator, since it is evident that the temperatures which you are obtaining may require suction pressures below atmospheric when using methyl chloride. A calcium oxide or activated alumina drier in your liquid line is an added protection which may help.

#### REMOVING HIGH SIDE FLOAT JOBS

**QUESTION 189.** *I would like to have all information I could get on a Frigidaire that is three years old, and has a high side float and would like to know about removing high side float, as far as Kelvinator is concerned, where high side float is mounted in receiver, and General Electric, where float is mounted on cabinet.*

*Would like to know about stuck Majestic hermetically-sealed unit as far as breaking it loose. I have tried 220 volts momentarily, and this will work on monitor top G.E.*

**ANSWER:** In removing high side float jobs where the float is located in the receiver, a tube from the receiver up to the evaporator should be well insulated to prevent a loss in refrigeration in this line. It is also ad-

visable to use a loaded check valve at the evaporator in cases of this kind. You will find that the Kelvinator evaporator is provided with such a valve located at the evaporator itself. Where the float valve is mounted on the cabinet as in the case of the G.E. refrigerator and a remote unit is used, some difficulties may arise if a receiver is used in the system. If the condensing unit were to be located in the basement, which might be at a lower temperature than the high side float which may be in the kitchen, it is quite possible to get a condition which we might describe as a gas bound float; that is, the machine might run and condense the refrigerant, condensing it in the receiver at a pressure lower than that which corresponds to the temperature of the high side float. In other words, suppose we were condensing and storing refrigerant in our receiver at a temperature of 80 degrees, while the high side float was at a temperature of 90 degrees. If liquid from the receiver passed into the high side float valve, it would flash into a vapor and tend to produce a pressure higher than that obtaining in the receiver. In other words, the high side float chamber would be filled with vapor rather than liquid and it is the liquid which opens the float valve and thereby feeds the refrigerant into the evaporator.

If the Majestic hermetically sealed unit does not respond to a momentary treatment of 220 volts, I do not believe you will be able to free it up successfully.

## NEW MECHANICAL DEVICES Service Tools and Special Equipment

Under this heading there will be published illustrated descriptions of new or improved service tools and equipment for the Service Engineer. Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

#### RANCO ADDS TEN NEW EXACT REPLACEMENTS

A NEW bulletin, just issued by Ranco, Inc., Columbus, Ohio, lists ten new Ranco domestic refrigerator thermostats that are exact replacement units. In addition, the bulletin carries several of the new Ranco Commercial Controls recently added to the line.

In referring to the new bulletin, Mr. R. R. Dunlop, secretary of Ranco, Inc., stated, "The news that Ranco has just introduced

ten new exact replacement control units for domestic refrigerators is causing very favorable comment among the trade. Ranco has always featured the exact replacement idea. With exact replacements all necessity of cutting and fitting is eliminated and there is no problem of temperature settings or adjustments to cause possible dissatisfaction on the part of the owner."

Dealers and service men can secure a copy of this new Ranco bulletin by addressing Ranco, Inc., Columbus, Ohio, and asking for Bulletin 701.



## FROSTOFF AUTOMATIC DEFROSTING-HUMIDIFYING SYSTEM

**THE** Frostoff Automatic Defrosting-Humidifying System is a development of The Frostoff Co., Inc., 250 East 43rd St., New York City, to automatically provide for defrosting of household and commercial refrigerators. The Frostoff device is manufactured in a shelf and wall model. Simply hooked up to the refrigerator, it provides an attractive clock and there is no installation whatsoever—a child can hook it up.



FROSTOFF AUTOMATIC DEFROSTER

It eliminates the necessity of hand defrosting, and makes this operation entirely automatic, the manufacturers claiming that in doing so, reducing current consumption as much as 25 per cent.

The Frostoff Company has provided a plan for service organizations, without any investment required, to sell this modern defrosting device to owners of domestic and commercial equipment. Over 25,000 are now in operation. The company invites service organizations to secure complete information on the plan which they have arranged.

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## GASKET BULLETIN ISSUED BY CHICAGO-WILCOX

**T**HERE was recently described in these columns, the publication of Bulletin No. 30, illustrating the complete line of gaskets for refrigeration, as manufactured by the Chicago-Wilcox Mfg. Co.

Since the publication of this catalog, the company has issued Bulletin No. 40, which contains practically the same information, except in condensed form. Bulletin No. 40

contains list prices on the complete line of gaskets.

The bulletin is 8½ by 11 inches in size, containing 12 pages of information. Service companies are invited to write the company at 7701 Avalon Ave., Chicago, if they desire a copy of this bulletin.

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## H. CHANNON COMPANY PERSONNEL CHANGES

**R**ALPH E. KRAMER, general sales manager of the H. Channon Company, announces the appointment of Mr. Bart B. Dawes as Manager of the Refrigeration and Air Conditioning Department.

Mr. Dawes has had many years' experience in this field and is well known in refrigeration circles in the Middle West. In order to more closely contact Channon's many customers, Mr. Jack Glass has been transferred to outside activities from his previous position in the inside organization. Mr. Bob Mitchell will take over Mr. Glass' former duties. Mr. Charles F. Vitaska has accepted a position to assist Mr. Mitchell. Mr. Vitaska, who has had a number of years' experience in repair, service and installation of domestic and commercial refrigeration, is thoroughly conversant with the game and fully understands the problems of the refrigeration service engineer.

H. Channon Company has made the above changes and addition with the sole purpose of being of greater value to the refrigeration and air conditioning industry. In addition, stocks have been greatly increased and many new lines of merchandise will be found in Channon's new Catalog No. 11.

All refrigeration service engineers are cordially invited to inspect the Channon stocks at any time. They will find the complete Channon organization at their service.

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## BLYTHE'S CATALOG READY

**T**HE new 1937 catalog of H. W. Blythe Company is just being mailed to the wholesale trade. This new catalog has been enlarged to an 8½ x 11 inch size, and contains 68 pages, covering many new items, and a complete revision of prices over the previous catalog. Many nationally known manufacturers products are listed, such as Ansul Chemical Co., Detroit Lubricator, Imperial Brass, Kerotest, Ranco, Gilmer, Prest-O-Lite, Penn Electric Switch, Fedders, Chieftain, Henry, Chicago-Wilcox, Perfection, etc.



There are many additional listings covering such items as tools and equipment, motor bushings, brushes, all types of gasket materials, accessories, ice cube trays, defrosting trays, torches, gas masks, motor pulleys and fans, etc. Practically all items which are purchased by the service company for resale are shown at list prices, and a confidential discount sheet appears on the last page of the catalog. This protects the service companies from exposing their wholesale costs to their customers.

Much larger stocks are on hand to take care of the increasing business, and a delivery system has been inaugurated for the metropolitan district of Chicago whereby from two to three deliveries are made in all parts of the city each day.

H. W. Blythe invites any service companies who are not receiving this catalog to send in their names and same will be sent to them. In order to protect the trade it is, of course, requested that such companies identify themselves by forwarding their request on a letterhead showing that they are entitled to this wholesale classification as it is the policy of this company to sell only to legitimate service companies.

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### TECUMSEH BUILDS NEW "V" TYPE FOUR CYLINDER COMPRESSOR

THE Tecumseh Products Company, Tecumseh, Mich., announces a new "V" type four cylinder compressor designed for use on one-half to one horse-power applications.

All of the proven mechanical features of their present models have been incorporated in this new model. Other added features include, one piece crankcase construction, making it possible to hold the cylinder bores at right angle to the main bearings, eliminating the necessity of piston rings.

Suction shut-off valve can be adjusted to various inlet positions by means of an adjustable plate which serves as a cover for the gas distributing chamber, which is cast between the two banks of cylinders. Eccentric drive construction with one piston on compression at every 90-degree revolution. This arrangement eliminates practically all vibration and makes this unit very desirable for self-contained air cooling applications and other applications where noise and vibration are important problems. The compactness of this unit enables installation in very small spaces.

Many other engineering improvements have been added to give this unit a very high refrigerating capacity.

Friction has been reduced to a minimum resulting in better thermal efficiency.

The important service feature of this new unit is the fact that a large majority of the parts are interchangeable with the parts used in the single and twin cylinder models.

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### NEW LARGE THERMO-GRIP ELECTRIC PLIERS

THE No. 5 Model Ideal Electric Pliers was introduced several months ago as a new and novel type of electrically heated soldering tool for small soldering work.

Shortly after this tool was placed on the market, there appeared a demand for a similar tool, which would handle larger work, and as a result the Ideal Commutator Dresser Company, 1568 Park Avenue, Sycamore, Illinois, has developed the Ideal No. 10 Electric Pliers, which will do work over twice the size of that for which the No. 5 is used.

The larger size Pliers are used for soldering lugs up to 1050 amperes or sweating pipe fittings up to 2½ inches in diameter, under continuous operation. When used only intermittently, the No. 10 Pliers will handle pipe or fittings up to 4 inches in diameter.

Ideal Electric Pliers are distinctly different from all other soldering tools in the following ways: they sweat joints without unsweating adjacent connections; they hold work firmly while soldering; they heat the work evenly from both sides and eliminate open flame hazards.

The line current from which they operate is reduced to a harmless low voltage so no electric shock is possible.

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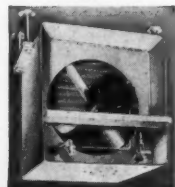
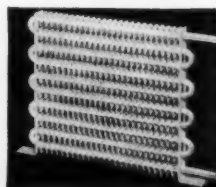
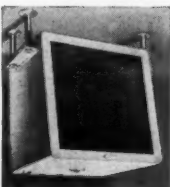
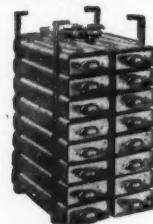
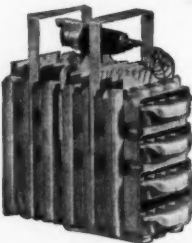
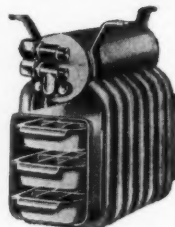
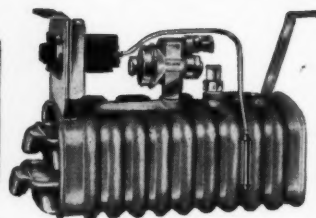
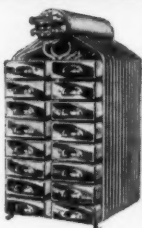
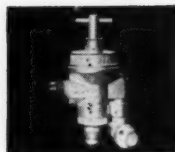
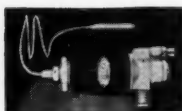
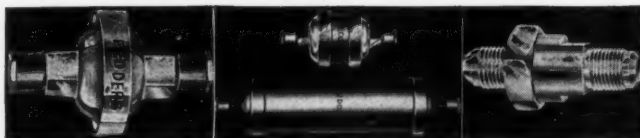
### TWO PEERLESS CATALOGS NOW AVAILABLE

PEERLESS of America has just completed distribution of two 1937 catalogs.

The Commercial Refrigeration Products Catalog, a sixty-four page book, is larger and more complete than ever before. Featured, is the complete line of Peerless Fin Coils for all cooling purposes; a larger line of Unit Coolers including the new "Synchro-Fan" models; ice cube makers, both plain and finned; the new "Humidi-Pack" household evaporators; a complete and larger line of valves and heat exchangers. List prices and all engineering information as well as

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BRIDGEPORT, CONN. Parsons  
BROOKLINE, MASS. Refrigerator Supply Co.  
BUFFALO, N. Y. Fedders Manufacturing Co.  
Beals, May & Rogers  
Root-Nash  
CHARLOTTE, N. C. Henry W. & Co.  
CHICAGO, ILL. Fedders Manufacturing Co.  
Airo Supply  
The Harter Company  
H. W. E. Co.  
Borg-Warner Service Par.  
H. Champany  
CINCINNATI, OHIO Fedders Manufacturing Co.  
Merkel Bros. Co.  
CLEVELAND, OHIO Debes & Son  
The Harter Company  
COLUMBUS, OHIO Hughes Electric Co.  
DALLAS, TEXAS Fedders Manufacturing Co.  
Beckwith Co.  
DAVENPORT, IOWA Republic Co.  
DAYTON, OHIO Allied Boston Co.  
DENVER, CO. Auto Electric Company  
DETROIT, MI. W. C. B. Company  
FERNWISSE, IN. Enoch Company  
FORT WORTH, TEXAS McKinley Corporation  
GREENSBORO, N. C. Home Appliance Service  
HARRISBURG, PA. Melchior, Strong, Des.

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| ATLANTA, GA.<br>Fedders Manufacturing Co.<br>M. D. P. Co.                            | HEMPSTEAD, L. I.<br>Sid Harvey, Inc.   | PORTLAND, ORE.<br>Bill Hieber, Refrigerative Supply Dist.<br>Stone Supply Co.  |
| BALTIMORE, MD.<br>Melchior, Armstrong, Dessau Co.                                    | HOUSTON, TEXAS<br>Walter Refrigeration Supply Co.  | PROVIDENCE, R. I.<br>R. I. Supply & Engineering Co.  |
| BINGHAM, N. Y.<br>Services Co.   | INDIANAPOLIS, IND.<br>Langsenkamp Company  | RICHMOND, VA.<br>Refrigeration Supply Co.  |
| BOSTON, MASS.<br>Fedders Manufacturing Co.<br>A. E. B. Co.                           | JACKSON, MISS.<br>Enochs Sales Co.   | ROCHESTER, N. Y.<br>Melchior, Armstrong, Dessau Co.<br>Pfadtler's Refrigerator Parts, Inc.                               |
| BRIDGEPORT, CONN.<br>Parsco  | JAMAICA, L. I.<br>Home Oil Burner Corporation  | SACRAMENTO, CALIF.<br>Hinshaw Supply Co.   |
| BROOKLYN, N. Y.<br>Refrigerative Supply Co.  | KANSAS CITY, MO.<br>Forslund Pump & Machinery Co.<br>Natkin & Company  | SAN ANTONIO, TEXAS<br>Strauss-Frank Co.<br>Westbrook Carburetor & Electrical Co.   |
| BUFFALO, N. Y.<br>Fedders Manufacturing Co.<br>Beals, May & Rogers<br>Root-Nelson    | LANCASTER, PA.<br>M. & E. Refrigeration Accessories Co.  | SAN DIEGO, CALIF.<br>Allied Refrigeration  |
| CHARLOTTE, N. C.<br>Henry W. & Co.   | LONG BEACH, CALIF.<br>Allied Refrigeration   | SAN FRANCISCO, CALIF.<br>California Refrigerator Co.<br>Pacific Metals Co., Ltd.<br>Refrigerator & Power Specialties Co. |
| CHICAGO, ILL.<br>Fedders Manufacturing Co.<br>Airo Supply<br>The Harry Alter Company | LOS ANGELES, CALIF.<br>Fedders Manufacturing Co.<br>Franklin G. Siegel Co.<br>Pacific Metals Co., Ltd.   | SANTA ANA, CALIF.<br>Allied Refrigeration  |
| CINCINNATI, OHIO<br>Fedders Manufacturing Co.<br>Merkit Co.                          | LOUISVILLE, KY.<br>Geo. Dehler, Jr. & Co.  | SEATTLE, WASH.<br>Refrigerative Supply, Inc.<br>Refrigerator & Power Specialties Co.                                     |
| CLEVELAND, OHIO<br>Deben Company<br>The Harry Alter Company                          | MACON, GA.<br>Lowe Electric Co.  | SPRINGFIELD, ILL.<br>United States Electric Co.  |
| COLUMBUS, OHIO<br>Hughes Electric Corp.  | MEMPHIS, TENN.<br>United Refrigeration Supply  | ST. LOUIS, MO.<br>The Harry Alter Company<br>Brass and Copper Sales Co.<br>The Spangler Company<br>R. E. Thompson Co.    |
| DALLAS, TEXAS<br>Fedders Manufacturing Co.<br>Beckett Co.                            | MIAMI, FLA.<br>Bernier-Peace, Inc.   | ST. PAUL, MINN.<br>Thermal Service Co., Inc.   |
| DAVENPORT, IOWA<br>Republic Co.  | MINNEAPOLIS, MINN.<br>Refrigeration & Industrial Supply Co.  | SPRINGVILLE, MASS.<br>C. P. Payson Co.   |
| DAYTON, OHIO<br>Allied Refrigeration Co.   | MONTGOMERY, ALA.<br>Teague Hardware Company  | SYRACUSE, N. Y.<br>Syracuse Supply Co.   |
| DENVER, CO.<br>Auto Electric Company   | NEWARK, N. J.<br>T. W. Binder & Company  | TORONTO, CANADA<br>Davis Automatic Controls Co.  |
| DETROIT, MICH.<br>W. C. D. Company   | NEW ORLEANS, LA.<br>Enochs Sales Co.<br>The Spangler Company, Inc.   | TUCSON, ARIZ.<br>Glover & Clark  |
| FERNDALE, MICH.<br>Enochs Company  | NEW YORK CITY<br>Fedders Manufacturing Co.<br>Melchior, Armstrong, Dessau Co.<br>The Harry Alter Company<br>Aetna Supply Co.<br>Paramount Electrical Supply Co.<br>Servicemen Supply Co., Inc. | WASHINGTON, D. C.<br>Refrigeration Supply Co.  |
| FORT WORTH, TEXAS<br>McKinley Refrigeration Supply Co.                               | PHILADELPHIA, PA.<br>Fedders Manufacturing Co.<br>M. & E. Refrigeration Accessories Co.<br>Melchior, Armstrong, Dessau Co.<br>Victor Sales Corporation   | WILKES-BARRE, PA.<br>Radio Service Co.   |
| GREENSBORO, N. C.<br>Home Appliance Service Co.                                      | PHOENIX, ARIZ.<br>Pratt-Gilbert Hardware Co.   | VANCOUVER, B. C.<br>Fleck Bros., Ltd.  |
| HARRISBURG, PA.<br>Melchior, Armstrong, Dessau Co.                                   | PITTSBURGH, PA.<br>William M. Orr Co.  | WHITE PLAINS, N. Y.<br>County Seat Plumbing Supply Co., Inc.   |

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ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

valuable descriptive and sales information is included.

The Air Conditioning Catalog offers a complete line of air conditioning low sides, including comfort coolers, complete floor or ceiling type units from one to twenty tons capacity, bare coils from one to forty tons, valves and heat exchangers, and the new line of Peerless Water Savers (evaporative condensers).

Items of unusual interest in the air conditioning book are: the Peerless Equalizer which insures proper refrigerant feed to horizontal air flow coils. This device distributes the refrigerant equally to each row of the coil with the result that the entire surface is operating at highest efficiency.

A new type of blower, the Peerless "Helicon-Fan," delivers a larger volume of air for a given size and motor horse power, and eliminates air pulsation and vibration.

All comfort coolers are equipped with filters as standard equipment. The filter assemblies on floor and ceiling type units are constructed so that filters are easily removed without the need of tools or of tearing down the unit.

Both catalogs contain a wealth of sales and engineering information on all phases of refrigeration and air conditioning. Either book may be had free by legitimate users upon request to Peerless of America, 515 West 35th Street, Chicago, Illinois.

\*\*\*

### KELVINATOR PARTS NOW MERCHANDISED THROUGH PARTS JOBBERS

**I**MPROVED service is now made available to owners of mechanical refrigeration equipment by Kelvinator Division of Nash-Kelvinator Corporation through the creation of new franchises for refrigerator parts jobbers. Details of the new policy have just been made public by Kelvinator. Changing business conditions and numerous requests from jobbers are responsible for the new arrangement.

"Authorized Genuine Kelvinator Parts" franchise will be awarded jobbers in each city, preference being given jobbers operating in strict accordance with tenets of the National Refrigeration Supply Jobber's Association.

Selling parts through Parts Jobbers will provide wider distribution and many more points where servicemen can get genuine parts.

### REFRIGERATION JOBBERS MANAGE SUNRISE EASTER SERVICE

**S**UNRISE Easter Service on top of Mt. Davidson under the highest cross in the world was managed this year principally by officials of the California Refrigerator Co., Clarence F. (Sandy) Pratt as honorary chairman, Lem V. Branson as vice-chairman, and Jess E. Rauch in charge of finance and trails. The entire organization of the California Refrigerator Co., was on San Francisco's highest mountain on Easter morning as the sun rose over San Francisco Bay, assisting the different committees. An estimated 50,000 worshippers climbed the mountain Easter morning. The Red Network of the National Broadcasting Co. brought the services to millions of radio listeners on a coast to coast hook-up.

"Sandy" Pratt is one of the founders of these services, the second oldest one in the world. It requires fifty traffic officers to handle the large crowd and parking of automobiles extends as far as two miles from the concrete 103 foot cross.

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### PENN SWITCH PERSONNEL CHANGES

**O**N March 1st Penn Electric Switch Co. announced the opening of its new branch office at 333 Mutual Home Building, Dayton, Ohio. This office is in charge of R. V. Clark who served as manager of the company's New York Office for six years. Prior to taking charge of Penn's New York Office, Mr. Clark was on the home office staff of the company at Des Moines, Iowa.

R. H. Luscombe, who was in charge of Penn Electric Switch Co.'s Gas Control Division for three years, has been named manager of the New York Branch at 101 Park Avenue, to succeed Mr. Clark.

Mr. N. E. Jennison has recently been appointed as a senior engineer in the sales division.

Prior to joining the Penn organization, Mr. Jennison was instructor on oil burner installation and service in the Essex County Vocational School, Newark, N. J. Previous to that, he had served as sales engineer of the Worcester Gas-Light Company, Worcester, Mass., and as a research engineer of the Gilbert and Barker Manufacturing Company, Springfield, Mass. He is a graduate of Sheffield Scientific School, Yale University.

# REFRIGERATION SERVICE ENGINEERS' SOCIETY

Official Announcements of the activities of the National Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.



## THE OBJECTS OF THE SOCIETY

To further the education and elevation of its members in the art and science of refrigeration engineering; for the reading and discussion of appropriate papers and lectures; the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery.

**ASSOCIATION HEADQUARTERS: 433-435 North Waller Ave., CHICAGO, ILL.**

## GREETINGS TO OUR NEW MEMBERS

I WANT to welcome you into the Refrigeration Service Engineers' Society and tell you that I am very glad to have you as a member of our organization.

Ever since this Society started we have worked constantly with one thought in mind—to make the association the one place where all refrigeration men will feel at home; a place where you can get your problems solved; where you can meet old friends, and make new ones; where you and your wife, if you are married, may become acquainted with other members and their wives through our social affairs, and where we can all meet once a year—at the annual convention.

During the past few years much work has been done to promote a better understanding between the various branches inside the refrigeration industry, and every day brings us closer to uniform trade practices which will result in more profits for all of us.

I should, of course, like to have you secure much benefit out of this organization, but the only way you can get it is by taking an active interest in the affairs of the Society. Attend the meetings regularly, and do your part to make the meetings what they are intended for by bringing about discussions on various problems such as you encounter in your everyday work. Through these discussions many points of interest to everybody present will be brought out, and you almost invariably learn something you did not know before.

I want you to feel free to write any of the National Officers at any time. These men are chosen as officers because they in

the past have shown that they have the Society's, and through that your, interests at heart, and they are always glad to answer letters sent them by the members.

To sum it all up in a few words, we want you to become an enthusiastic member of the Society, because we, who have been members for some time, think a lot of the R.S.E.S.

Cordially Yours,

PAUL JACOBSEN, *National President*

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## CAPITAL CITY CHAPTER

Meeting of March 19, 1937

By J. H. FRANTUM, *Secretary*

1516 Monroe St., N. W., Washington, D. C.

THE regular meeting of the Capital City Chapter was held at 511 E St., N. W., March 19, 1937.

The meeting was called to order by President Matheson.

The report of a special committee appointed to gather information regarding the holding of some sort of entertainment, by which we might derive some profits as well as advertising our chapter, was read by the Chairman, Mr. Uthoff. The following are the results of the report:

Motion by Mr. Price and seconded by Mr. Deem that we call a vote so as to decide whether we hold a dinner dance or oyster roast. It was voted by a majority that we hold a dinner dance at the "Lee Tavern" on April 24, 1937. It was decided that the tickets would be of the coupon type, part to be taken at the door and the remainder to be taken when served, and the price will be \$1.00 each. It was also decided that we would have a 20-page program, two pages

to be used by us and the remainder sold as advertising space.

Motion by Mr. Trumble and seconded by Mr. Hamilton, that we turn the affair over to that committee to complete. Mr. Uhthoff asked for an appropriation for printing. It was granted by a majority vote.

Mr. Bielaski was appointed as Chairman of the Membership Committee.

§ § §

## NIAGARA FRONTIER CHAPTER ORGANIZES LADIES AUXILIARY

By MRS. GEORGE O'HARA, JR., Chairlady  
199 Fairfield Ave., Kenmore, N. Y.

**T**HE first meeting to organize the Ladies Auxiliary was held Friday evening, March 5, at the home of Mrs. Ray Parsons, 969 Ellicott St., Buffalo.

The following ladies were present: Mesdames Elroy Weise, Fred Pickering, Ray Henke, Donald Schuster, Charles Keyes, George Wilson, Ray Parsons, Louis Wolfe, George O'Hara.

Plans for organization were discussed, as well as plans for the coming card party of the Chapter.

Refreshments were served and the meeting proved that there is a very promising future for this Auxiliary.

## CENTRAL NEW YORK CHAPTER

Meeting of February 8, 1937

By F. G. MACKIN, Secretary  
354 W. Genesee St., Syracuse, N. Y.

**M**EETING was called to order at 8:00 P.M. by President Carl Stewart. The Secretary's and Treasurer's reports were accepted as read.

President Stewart gave a talk on service prices, and was followed up by a talk on the same subject by Mr. H. A. Persett.

Mr. Ball, a Fusetron representative, gave a short talk on the proper use of Fusetrons.

The members then engaged in a lengthy discussion regarding the increasing of service prices in Syracuse to a minimum charge of \$2.00, which would include up to one hour, and \$1.75 per hour for the time over one hour.

Meeting of March 8, 1937

Mr. D. N. Roderick, who is acting on a committee to contact the proper officials at the city hall regarding codes, reported that the matter is now in the hands of the Common Council of this city. A discussion by the members on this subject in general followed.

A motion was made by Mr. G. A. Davenport, and seconded by Mr. H. A. Persett,

**Nº53** BIG, NEW WHOLESALE BUYERS' GUIDE NOW IN PREPARATION!

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**TRENTON AUTO  
RADIATOR WORKS**

TRENTON, N. J.

Kramer Auto Radiator Corp.  
New York, N. Y.

Kramer Auto Radiator Co.  
Pittsburgh, Pa.



that our next regular meeting be held as an open meeting on April 12th. Motion adopted. The sandwiches will be furnished by the Syracuse Supply Company and the other refreshments by the Syracuse Equipment Co. A speaker is expected from the Detroit Lubricator Company through the courtesy of the Syracuse Supply Company. Invitations will be sent to all service men in this section.

Mr. Persett talked on the subject of local service men purchasing supplies from local

jobbers. A motion was adopted covering this recommendation.

A Sick Committee, consisting of Messrs. H. A. Persett, B. C. Goodhue, and R. J. Wall, was appointed.

Motion was adopted that Mr. V. E. Hall of Binghamton be invited to speak at our next closed meeting.

The members agreed to notify all local refrigeration companies of our next open meeting and ask them to notify their employees.

## KRUPP WATER REGULATOR

for Methyl-  
Freon-Sulphur



A regulator featuring elimination of the stuffing box. Water valve body is made of cast bronze and has renewable rubber composition seat; noiseless in operation; the frame is so designed that adjustments can be made easily. Operating range from 50 to 120 lbs.

Bulletins and prices  
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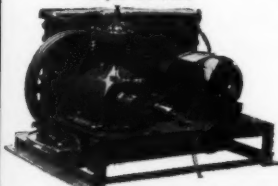
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YEARS WHO CAN SELL  
TO THE GROCERY AND MEAT  
TRADE**

America's most successful manufacturer of equipment for grocers and butchers is enlarging his selling area. A limited number of profitable dealerships now open to men of character and experience. Support from extensive national advertising campaign. Drawing account considered for sincere, desirable applicants. Our representatives earn between \$35 and \$200 weekly! Write fully, experience, age, references, pen and ink in your own handwriting. Your reply kept confidential. Nothing to buy, no obligation.

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**The Refrigeration Service**  
**Engineer**  
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**Chicago, Ill.**

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Condensing Unit  
Style D7-MA

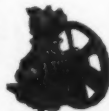


## STARR FREEZE

**DEPENDABLE COMPRESSORS AND CONDENSING  
UNITS**

**1-2-4 Cylinders—1/8 to 10 H.P.**

The most profitable and complete line to select from—just the size to build that refrigerator,—to assemble that condensing unit or to replace that old worn-out compressor.



**THE STARR COMPANY, Richmond, Ind., U. S. A.**

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Cleveland, Ohio

Compressor  
Style J

## ST. LOUIS CHAPTER

Meeting of February 25, 1937

By E. A. PLESSKOTT, Secretary  
2145 67th Street, St. Louis, Mo.

THE regular meeting of St. Louis Chapter held at the German House, February 25, was called to order at 8:30 P.M. by Vice-President L. L. Vollman in the absence of President Gygax, who was out of town on business.

The minutes of the February 11th meeting were read and approved, and the meeting was turned over to Mr. Tinkey, the educational chairman, who introduced Mr. H. C. Rethwisch, formerly sales promotion manager for the "Finnell Systems"; also sales supervisor of the Cities Service Oil Company, and at present with the Norge Company of Missouri, in a like capacity.

His subject, "That Something," dealt with the ways and means of getting and doing business at a profit. How to most effectively advertise, where to look for your prospective customers, and how to deal with the "chiseler." Mr. Rethwisch's talk follows the report of this meeting.

Secretary Plesskott introduced Mr. Kris-

pin, a prospective member, who when it was discovered he was employed by the local Crosley distributor, was immediately pressed into service by a number of members who had questions on this particular job. He promised to go into detail on all common service operations at our meeting of April 8th.

Mr. E. C. Fix introduced Mr. Emil Nagal, another prospective member. Mr. Tinkey outlined the next three meetings, and suggested that no member miss any. The first two are topics relating to air conditioning, and as we are at the brink of the 1937 season, we were most fortunate in getting these speakers at this opportune time. As previously noted, the subject of our meeting of the 8th of April will be servicing the Crosley. Mr. Tinkey requested that the members advise him of subjects they think would be of interest and he will try to get the speakers.

The Secretary read the proposed draft of a letter drawn up by Mr. H. J. Nettler to be sent to the trade. It was decided to use it as written with the exception of dues and signature, and to give mention of pending

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## RAPID HEAT TRANSFER!

Patented "THERMO FIN" in tube speeds up flow of refrigerant INCREASING EFFECTIVE SURFACE.

### "THERMO FIN" TUBES

available in all coils made by

**MANUFACTURERS FIN COIL COMPANY**  
2505 South Pulaski St. CHICAGO, ILL.

meetings in an effort to get an immediate response.

Open discussion of a service problem, brought up by Mr. H. Wilderman, was held, without any definite conclusion being reached as to a positive and effective remedy or the actual cause for this particular source of trouble.

The Secretary read the list of delinquent members, and several present promised to call on those with whom they were well acquainted in an effort to get them in good standing.

Mr. Wilderman advised the Secretary he is going to a service meeting in Decatur, Illinois and hopes he will be given the floor so he can inform those attending of the advantages of membership in the R.S.E.S.—even if only as members-at-large—since most of the men at the meeting will be from towns not having chapters.

The Secretary advised the members present that he had multistamped some cards giving the year, page and name of the city in case any one wanted to look up code information without lost motion. These were to be had for the asking after the meeting.

Mr. Rethwisch's talk to St. Louis Chapter follows:

## "THAT SOMETHING"

By H. C. RETHWISCH

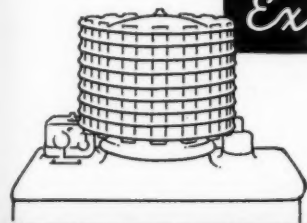
I consider it a privilege to address the men who, at least in a measure, are responsible for my own livelihood, and I mean just that, for it is only as refrigerators are maintained and render a service in the home that new sales can be effected.

To you men goes the responsibility of protecting refrigerator investments totaling more than one hundred million dollars in the city of St. Louis alone.

I like to think of you men as business men, for truly that is what you are, or at least should be. Some of you are independent service men, others of you represent service organizations. My sole hope here this evening is to give you a broader scope of your responsibilities in order that you may get a true perspective of your present and future business.

Service organizations might well be divided into three classes: namely, the organization which has both money and time invested; again, the individual who may have only money invested; and the third, the individual who has time only invested.

In the latter case, time is your capital and you need, therefore, of necessity, to protect that investment of time. It is imperative, therefore, that you do not attempt to cover too large an area, thus dissipating



## Expert REBUILDING & REPAIR

**General Electric MONITOR TOP UNITS \$25**

All Household Models

**MAJESTIC HERMETIC UNITS—\$20.50**

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**F.O.B. OUR FACTORY**

**One Year Unconditional Guarantee**

A complete rebuilding and replacement service. All units tested for temperature, cycling, wattage consumption and quietness. Thousands of units rebuilt in past seven years. We guarantee satisfaction.

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If you are, we suggest that you write immediately for our latest merchandising plans in which we can definitely give you several ideas which have been successfully proven, and which we know will immediately pick up your sales.

We can supply you with Kontanerette products ranging from \$.50 retail to \$5.50, a size for every purpose.

Write today for complete catalogue and information if your jobber does not stock these products.

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SERVICE ENGINEER

your time and increasing your expense going to and from your work.

I would bid you to think along the lines of diversification, as many manufacturers have found it necessary to do in the last few years. By that I mean, possibly time and the opportunity would lend itself for you to handle appliances for resale.

If I were an independent service engineer, I would give prime consideration to overhead and the amount of business per month necessary to meet that overhead. Again, I would look about me for new fields to conquer in the way of new business. This direction I would think of in terms of advertising, determining which of the several advertising media is best suited for my particular needs to further exploit my business. The following media is for your consideration:

- 1—Newspapers
- 2—Direct Mail
- 3—Telephone Directory
- 4—Cards
- 5—Blotters
- 6—Calendars
- 7—Radio

Each of these has some particular advantage and yet, of course, will have some disadvantage. Therefore, I would select the one best suited to my particular needs.

Again, I would think in terms of cold

canvass. I would start with my next door neighbor and work out so far as I thought it profitable to operate. Very often the other pasture looks more green and we run by hundreds of prospects to call on some casual prospect which does not prove to be a prospect at all.

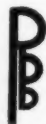
Another factor that presents itself, is the proverbial price-cutting, which reminds me of a story of a prophet who had a cargo to be transported through the desert. He called before him six donkeys, asking them to make bids for the assignment involved. The first donkey said he would make the six-day trip for six bales of hay and three bags of dates. The second donkey having heard his bid agreed to do it for four bales of hay and two bags of dates, and so on down the line until the last donkey came in with his ears hanging low and agreed to make the trip for only one bale of hay, whereupon the prophet said, "You are an ass. One bale of hay will not sustain life one-third of the trip." Whereupon the ass replied, "I know it, but I want the order." And from that day to this donkeys have been known as asses.

Price cutting is the first sign of poor service or a weak salesman. Values are not determined by price tags, but rather by valuable service rendered and I once heard

## DENNIS GASKETS FOR ALL MAKES REFRIGERATOR DOORS



A complete line of rubber - coated, packed Gaskets and extruded rubber Gaskets that last longer—retain higher efficiency—because made of finest materials and workmanship. Write for free samples, giving your jobber's name and address.



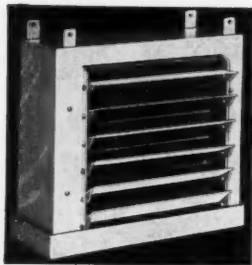
**W. J. DENNIS & CO.**  
2110-20 WEST LAKE ST. CHICAGO

## ATTENTION, SERVICE MEN!

Write for particulars concerning our extension course designed especially to give you a thorough knowledge of the technical part of Refrigeration and Air Conditioning.

### DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING

4125 Grand River Detroit, Mich.



## UNIT BLOWERS

Pipe Coils  
Air-Conditioning Coils

## FIN COILS

5/8" - 3/4" - 1"

Steel or Copper

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it well expressed that some people are extravagant by being too economical. They spend too much in the end, for having spent too little in the beginning.

A boy once walked into a telephone booth in a drug store and called a number. He said, "Did you advertise for a boy?" The gentleman replied, "No, we have a boy." The boy said, "Is he a good boy?" and the proprietor said, "Yes, we are entirely satisfied," and hung up the receiver. As the boy was leaving the drug store the druggist stopped him and said, "Young man, I hope you are successful in getting that job. I happened to overhear your conversation." whereupon the boy replied, "Say, listen, I have had this job for nearly six months and I was merely checking up on myself." It is my belief that we all need to check up on ourselves every day to determine just what we have accomplished and to outline our work for the following day and by following this simple rule our efforts can be made infinitely more effective and less time lost.

All people are fundamentally the same, the difference being as in inanimate material things, a difference of refinement which I can best illustrate as follows: If we were to go down to the Ozark Mountains we could no doubt buy iron ore for approximately \$4.00 per ton. However, when that iron ore

has been sent to the smelter and converted into pig iron, it immediately has a value of approximately \$13.00 to \$14.00 per ton. Yet it is the same material. Again, the same pig iron converted into steel rails has an approximate value of \$35.00 to \$38.00 per ton. And, again, the same iron ore converted into watch springs has a value of some \$12,000 per ton. Yet it is the same material, only has been more highly refined, and such is the case with individuals.

We can elect to be iron ore, pig iron, iron rails or watch springs, the difficulty being, however, that we are not willing to pay the price that predicates success. And success, gentlemen, is where you are.

I am reminded of an experience of a young man who was in New York city broke and hungry. He approached an individual on the street asking for enough money to buy a cup of coffee. The individual looked at the young man and said, "It is not money you wish, but 'that something.'" That statement, of course, did not appease the young man's appetite and he aimlessly walked down the street until he came to an alley, at which point he entered and came to the wrapping department of a large department store and immediately asked the foreman for a job and was refused. He asked the foreman, "Do you mind if I wrap bundles?" The foreman

# MILLS COMPRESSORS

★ FOR COMMERCIAL USE

*Mills Novelty Company  
4100 Fullerton Ave., Chicago, Ill.*

**Sold Only Through Servicemen, Dealers and Distributors**

laughingly said, "No, but you will not get paid for it." The boy, having all to gain and nothing to lose, wrapped bundles and wrapped them twice as fast as those who were regularly employed for that purpose. By then the foreman had observed his work and saw that he showed promise and offered him employment. He advanced rapidly and in each case mastered the work of the individual just above him in authority, and in the course of a few years, a superintendent of the plant was required and he was called in by the chief executive and there to his surprise he came face to face with the man whom he had met on the street and who had told him to find "that something."

Today, gentlemen, that individual is the head of one of our large educational institutions. I hope that each of you men may find "that something," and, too, I sincerely hope that for you it will always be the spring of hope.

#### Meeting of March 11, 1937

The minutes of the February 25th meeting were read and approved and Mr. Gyga turned the meeting over to Mr. Tinkey, who introduced Mr. J. H. Murphy of the Permutit Company, our speaker of the evening.

Mr. Murphy covered his subject in an able manner, going back to the discovery of the process, and bringing it up to its

present day use. He assured all that it is the most effective method of water softening known today. Questions as to various applications, initial cost, and upkeep were answered at the conclusion of his talk. Mr. Murphy also requested the names of those present who desired to have literature mailed to them.

Routine business was discussed, and Mr. Plesskott thanked Mr. J. Eichorn and Mr. N. Ward for bringing back into the fold one of the first members of our chapter, Mr. Sam Kennard, III.


Mr. H. Wilderman reported on his experience at the service school in Decatur. Having requested permission to talk to those in attendance on the benefits of joining the R. S. E. S., he was surprised to find that the engineer in charge of the meeting was a member of the Kansas City Chapter.

Mr. Tinkey reported on the progress he is making, which gives promise that the majority of our meetings will be of considerable interest.

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#### KANSAS CITY CHAPTER HOLDS DINNER DANCE

THE Kansas City Chapter has come to the front and registered another smashing hit with the servicemen of Kansas City by arranging and holding its annual dinner dance



## BONNEY TOOLS

are the

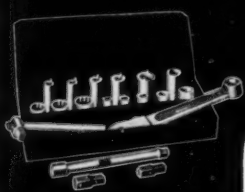
# Finest

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### BONNEY FORGE & TOOL WORKS

Allentown, Pa.



No. RF Set consisting of 5 packing gland nut sockets, 5 valve stem sockets, 3 double hexagon sockets, one 4 1/2" extension, one 4" sliding T, one ratchet and two male adaptors.



Flare Nut Wrenches for making flare nut adjustments. Available with double hexagon openings from 3/4" to 1 1/4".

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KANSAS CITY CHAPTER ENJOYS DINNER-DANCE

## CATALOG No. 11

**Parts — Tools — Supplies — Equipment**

INTRODUCES

### THE GREAT **CHANCO** HIGHSIDE

MADE AND GUARANTEED BY ONE OF THE OLDEST  
AND LARGEST MANUFACTURERS OF REFRIGERA-  
TION EQUIPMENT IN THE WORLD

GET ALL DETAILS—WRITE ON YOUR LETTERHEAD

### **H. CHANNON COMPANY**

133 N. Wacker Drive

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**Chicago, Illinois**

*"Suppliers to the Refrigeration and Air Conditioning Trades"*

on February 25, 1937, at the Hawthorne, three miles east on No. 40 cutoff.

This dinner dance was opened with no pomp and ceremony, arranged only for the benefit and pleasure of the servicemen, their wives and friends. The dinner that was served was fit for a king, consisting of fried chicken and all the trimmings. Following was the dance, with everyone enjoying themselves until the wee hours of the morning.

There were 98 servicemen, wives and their friends present as follows: Messrs. and Mesdames O. A. Anderson, T. L. Anderson, H. F. Andrews, Ed. Bentley, E. B. Bryant, Elmer Bloesser, R. T. Dixon, J. P. DeWilde, O. A. Greathouse, H. L. Green, C. L. Hataway, C. O. Kester, O. E. Kester, S. A. Leitner, R. E. Meeker, A. A. Monroe, Milozzo, McNamee, C. C. Newell, G. W. Paris, L. G. Penny, L. H. Roberts, H. O. Reams, R. L. Ryan, M. M. Rivard, F. H. Smith, J. P. Sloan, C. E. Soderberg, A. J. Trem, F. A. Thompson, Bob Young, Walter Von Demfarge, J. E. Wickstrom; Misses Betty Barroughs, Nell Bradbury, Myrtle Clark, Clorey Gasley, Florence Judd, Evelyn McCarver, Virginia Shanchan, Nina Spingon; Mrs. Vivian McGowan; Messrs. Rudy Brosamer,

Keat Crockett, Albert Creighead, Otis Clark, Rollo Fouts, James McGowan, Edgar Gaither, D. E. Hatter, C. Jones, R. E. King-solver, J. P. Leitner, C. H. McNauell, F. H. Mullins, Cliff Pilkey, Cecil Robinson, H. M. Reynolds, Ernie Tramposh.

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## NIAGARA FRONTIER CHAPTER

Meeting of February 24, 1937

By GEO. E. WILSON, 2nd Vice-President  
92 Royal Ave., Buffalo, N. Y.

**P**RESIDENT DONALD B. SCHUSTER presided at the February 24th meeting. After the roll call of officers by Recording Secretary F. H. Walker, Mr. Schuster directed the Secretary to bring up for discussion those matters which had been laid on the table due to the educational meeting sponsored by the Frigidaire Corp'n.

After disposal of these matters, President Schuster called for a report from the Chairman of the Standards Committee. Mr. Ray Parsons, chairman of the Standards Committee, read a report of the findings of his committee relative to the prices charged by the various service companies in this locality. He likewise stated that it was the in-

# Get this NEW BARGAIN CATALOG

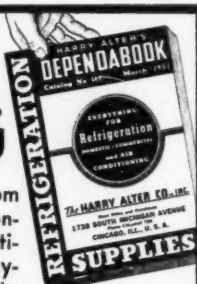
From Crispers to Highsides, from Accessories to Air Conditioning Equipment, from Artificial Food for displaying refrigerators to

**AIR CONDITIONING & REFRIGERATION SUPPLIES**

**THE HARRY ALTER COMPANY**

1728 South Michigan Avenue  
CHICAGO

BRANCHES  
New York — Cleveland — St. Louis



Refrigerated Display Cases for displaying food. Everything in refrigeration accessories, equipment, tools and supplies. The most complete line in the world. Distributors and Jobbers of America's finest manufacturers in refrigeration. Fast shipment from complete stock.

tention of the committee to arrive at prices for the chapter based on the committee's findings and to have them printed in the form of a bulletin.

Acting Educational Chairman George Wilson stated that as planned there would be an open forum discussion of service problems after this and the next meeting and that his schedule listed the Chevrolet Motor Company as sponsors of an educational program for the night of March 24th.

Mr. George O'Hara, chairman of the Entertainment Committee outlined the program prepared by his committee for a card and bingo party to be held on the night of April 14th. His request for prizes for that event received unanimous support in that each member present pledged a prize.

Mr. Schutz of Beals, McCarthy and Rogers, stated that his firm would be pleased to act as receiving agents for these prizes and deliver them the night of the party by truck.

Mr. Schuster then stated that under new business it was his pleasure to introduce the ladies present who had so graciously responded to a request to form a Ladies Auxiliary and that he thought it no more than right that inasmuch as Mrs. George

O'Hara had suggested the formation of such an Auxiliary more than a year ago that she be appointed chairlady. This choice received the hearty support of those present.

The regular meeting was then adjourned and followed by the educational program. This consisted of a discussion by Mr. Wilson on the design, purpose and application of temperating valves. Following this discussion he read a list of ten questions dealing with various installation and service problems. Those questions formed the basis of the open forum discussion which followed.

#### Meeting of March 10, 1937

At the meeting held March 10th, President Schuster read a letter which he had received from the National Office relative to ways and means of providing finance account to be set for the purpose of assuring a large attendance at the National Convention to be held in Chicago. Mr. Schuster was authorized by a motion to inquire further into this matter.

Mr. George O'Hara, after reading his report of the progress made for the card party, suggested that a date be set for the annual banquet. A motion to that effect

## HANDLED...SERVICED...WITH EASE!

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field-assembled units*

**Artic**

REG. U. S. PAT. OFF.

[ DU PONT METHYL CHLORIDE ]

Accidental introduction of moisture in field-assembled units is easily taken care of when ARTIC is the refrigerant. That's just another reason why Service Men find ARTIC to be a most convenient refrigerant. Complete information and list of distributors sent on request.



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The R. & H. Chemicals Dept.  
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District Sales Offices: Baltimore, Boston,  
Charlotte, Chicago, Cleveland, Kansas City,  
Newark, New York, Philadelphia, Pitts-  
burgh, San Francisco

**ARTIC — the preferred Methyl Chloride for the Service Man!**

set the date of the banquet as May 5th. Mr. O'Hara then read a list of the proposals and menus that he had received from a number of restaurateurs and it was decided by motion that the banquet be held at the Riviera.

Mr. Wilson suggested that inasmuch as the annual banquet had always been the time for inducting new officers a date should be set for the election of officers prior to the date of the banquet. A motion set April 28th as the date for nominating and electing these officers, and was passed. Mr. Wilson, when called for a report, stated that as the members had a schedule of educational activities given them at the last meeting he would dispense with that report. However, he read a letter which he had received from Mr. H. T. McDermott relative to his inquiry pertaining to identification badges to be used at the meetings. Following the reading of this letter, he passed around samples of the badges that had been used at the National Convention together with a reprint of an article which had appeared in our official organ back in May, 1934. This reprint dealt with the manner in which Mr. E. A. Plesskott, our National Sergeant-at-Arms, solved this problem.

Following Mr. Wilson, Mrs. G. O'Hara reported the progress as made by the Ladies' Auxiliary. The meeting was then adjourned for the purpose of the educational program which as per schedule consisted of an open forum discussion on electric circuits, motor starters, and contractors.

## ARE YOUR DUES PAID?

Keep in good standing. Don't miss any educational material or your official organ.

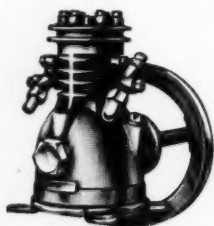
## CENTRAL INDIANA CHAPTER

Meeting of March 16, 1937

By PAUL JACOBSEN, Temporary Secretary  
R. R. 1, Marion, Indiana

THE meeting was called to order by Temporary President Vern Nold, who welcomed the guests and outlined for their benefit the value of having a chapter in central Indiana.

Temporary Secretary Paul Jacobsen told the history of the Society and asked everybody to bring out their questions. About one hour was spent answering various questions asked, and three new members joined.



## "Chieftain" Quality Built Compressors and Condensing Units



are designed to give you many years of quiet, efficient and trouble free service by Engineers who have been serving the refrigeration industry for the last fourteen years.

They have again "scored a hit" with a new "V" type four cylinder compressor which is designed for use with  $\frac{1}{2}$  to 1 HP motors. All of the advanced features that have proven so successful in "Chieftain" household and light commercial units are now incorporated in this new four cylinder model.

Mechanical improvements include, force feed lubrication to piston pin and connecting rod bearings, positive alignment of cylinder bores with main bearings by casting cylinders and crankcase in one piece. Adjustable suction shut-off valve, interchangeable parts with single and twin cylinder models. All compressor parts are machined to precision limits on up to date equipment and assembled in glass enclosed rooms where only filtered, dust free air is admitted.

Write for our latest descriptive catalog

**TECUMSEH PRODUCTS CO.,**

Refrigeration  
Division

**TECUMSEH, MICH.**

Several points of interest were brought up for discussion and the members told of various "freak" installations they had serviced in their respective territories.

It was decided that inasmuch as the chapter would cover the territory of central Indiana, that the meetings be held at various points at regular intervals.

According to Mr. Bernard McDonel, a number of members should be secured from Elwood, Indiana, so he extended an invitation for the chapter to meet in Elwood next time.

It was suggested that until the chapter had received its charter we hold as many meetings as possible, which everybody agreed upon.

The next meeting will be held in Elwood, the meeting place to be announced on the regular invitations.

Refreshments were served by Mrs. Vern Nold, and enjoyed by all.

Those present at this meeting were:

Vern Nold	Kenneth Nugent
Paul Jacobsen	Frank Whetsel
L. H. McMinds	Arthur Rentfrow
Bernard McDonel	

## PITTSBURGH CHAPTER

Meeting of March 8, 1937

By F. V. GOLITZ, Secretary  
1518 Davis Ave., Pittsburgh, Pa.

THE March meeting of Pittsburgh Chapter was held in the Commonwealth Building at 816 Fourth Ave., with approximately seventy members and visitors in attendance, and President John Kirch presiding.

President Kirch introduced Mr. C. P. Rittling of the Fedders Manufacturing Company of Buffalo, who gave a short talk on the Fedders line and presented a series of talking slides. This method of presenting service information is novel and very effective. Mr. Rittling was thanked by President Kirch for his fine program.

Mr. C. W. Lane of the Electric Products Co. was introduced and he extended an invitation to the Pittsburgh Chapter to attend a special meeting in the auditorium of the Electric Products Company for the purpose of presenting a new Frigidaire Parts and Service Information Plan. It was moved by Mr. N. D. Wagener and seconded by Mr. G. W. Gunnell that the chapter accept the invitation and meet on Monday, March 22 at the Electric Products Company.



Completely engineered Refrigerant Filters in a variety of sizes for varying capacities.

# NEW ZENITH

## REFRIGERANT FILTER

**Takes Out All the Finer Dirt  
with Its Patented Filter Element**

Zenith Filters have already proved their value and efficiency in thousands of commercial installations. Now these new specially built finer mesh Filters are available for any size or type refrigerator using Sulphur Dioxide, Freon or Methyl Chloride. Better performance, greater economy, minimum service and better satisfied customers will result from their use in new or old models.

These features put the Zenith Filter in a class by itself—Patented Element—Easily and Quickly Cleaned—Easy to Install—Insures positive protection from dirt in the refrigerant liquid—Corrosion-proof, leak-proof and ample capacity.

Write for full details

**ZENITH CARBURETOR CO.**  
Subsidiary Bendix Aviation Corp.  
DETROIT, MICHIGAN

A discussion of the method of soliciting prospective members among the visitors at each meeting resulted in a motion by Mr. H. S. McCloud and seconded by Mr. J. Barbagallo that after the educational feature the President call a recess to allow the Membership Committee time to contact prospective members. Motion carried.

President Kirch regretfully announced the death of Mr. J. Augustine of the Brown Dorrance Co. Mr. Augustine was a well known service man and an authority on Grunow refrigeration. The chapter sent its condolences to the bereaved family. Motion was made and carried that the Visiting Committee be empowered to send flowers at a cost not exceeding \$5.00 to the family of a deceased member. It was moved by Mr. McCloud and seconded by Mr. C. Terrill that the expense of these flowers be defrayed by a voluntary contribution from the members. Motion carried.

#### Ladies' Auxiliary

President Kirch announced that Mrs. John Kirch, Mrs. G. W. Gunnell, Mrs. C. V. Kane, Mrs. H. S. McCloud, Mrs. John Barbagallo and Mrs. F. V. Golitz were meeting at the

Secretary's home for the purpose of organizing a Ladies' Auxiliary.

§ § §

#### CHICAGO CHAPTER

Meeting of March 9, 1937

By W. STAFFORD, Secretary  
726 Hinman St., Aurora, Ill.

THIS was the most interesting and best attended meeting held thus far in 1937. A letter from the National Society was read, regarding the Speakers' Bureau Service. The list of names shown is a cross-section of important people in the industry. It shows the cooperation and recognition that our Society is receiving from the industry.

The chapter Examining Board held the first meeting and reported a program by which members who intend to take the necessary examination for certificate membership can study the paper and prepare themselves.

The Entertainment Committee reported that we are to have some special entertainment at our next meeting.

President Skipple appointed Mr. Harry Drownes as chairman of the Advertising Committee to handle the advertisements in our annual banquet program.

## Use it and breathe easier Cesco HEALTHGUARD FUME KIT

Mask and cartridges  
for all refrigerants  
in handy carrying case



The refrigerator serviceman is open to a gas attack every time he goes out on a call. **You** should see to it that he goes **prepared!** HEALTH-GUARD FUME KIT was designed especially for **this** work. Not a needless half ounce in the mask! Fits perfectly and permanently with one adjustment for the wearer—on or off with one move. Cartridges for methyl chloride, ammonia and sulphur dioxide. Compact—handy . . . and safe! Write for prices.

**CHICAGO**  
EYE SHIELD COMPANY  
2341 Warren Blvd., CHICAGO



President Skipple reported on the activities of his Code Committee. There was a meeting with other interested groups and the City Council to formulate a new city refrigeration code. As yet, there has been no definite progress, but meetings for discussion of changes are constantly being held.

At this point, the meeting was turned over to the Entertainment Committee. The initiation of 15 new members by the initiation team was immensely enjoyed by the members. We feel, after witnessing the capable manner in which this team handled the initiations, that other chapters might wish to avail themselves of their services. Notice is hereby given other chapters that we think it well worth having our initiation team perform for them. We can assure them an interesting and entertaining time as well as having their members initiated by the Chicago Chapter Initiation Team.

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### YOUNGSTOWN CHAPTER

Meeting of March 15, 1937

By MARTIN BOKESCH, JR., Secretary

R. F. D. No. 5, Youngstown, Ohio

PRESIDENT M. W. Bokesch called the meeting to order, followed by roll call

and minutes of the last meeting, as well as the Treasurer's report.

A letter from National President P. Jacobsen was read to the members.

Mr. E. Wright reported that Mr. Boucherle has the licensing ordinance drawn up and that it will be presented to the council next Monday, March 22nd.

Motion was made by Mr. Wright and seconded by Mr. Keith to put an advertisement in the local newspaper advising the public that the R.S.E.S. is raising its rates to \$2.00 minimum charge and \$2.00 per hour, effective at once.

Mr. W. I. Kimball moved that a committee be appointed to set up a list of standard charges on installation and service work. Mr. Kreitzburg seconded.

Messrs. M. Remaley and Gene Kreitzburg were appointed to the above committee.

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### MISSISSIPPI VALLEY CHAPTER

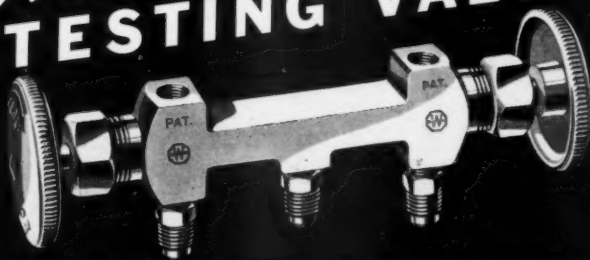
Meeting of March 12, 1937

By E. L. BENGSTON, Secretary

118 E. Front St., Davenport, Iowa

THE regular meeting of the chapter was called to order by President Lonnie Fish on Friday evening, March 12th, in the con-

## The Weatherhead TESTING VALVE



• A necessity for charging gas or oil in low and high sides—testing for leaks—purging gas from high side or gauge line—setting valves and controls. The Weatherhead Testing Valve makes all of these operations simple and accurate.

• Write for our new catalog which contains our complete listing of refrigeration valves and fittings with their modern features.

THE WEATHERHEAD CO., 632-714 Frankfort Avenue, Cleveland, Ohio

vention hall of the Republic Electric Company building.

The attendance was taken and it was found that for the first time since the chapter's organization the 75% mark was not reached.

Mr. E. L. Bengston, secretary, read the minutes of the previous meeting, as well as the Treasurer's report in the absence of Treasurer Fred Tindall. Both reports were accepted as read.

A Membership Committee consisting of the following members was appointed: Mr. Frank Weatherly, *chairman*; Rusty Williams, and Clarence Teagarden.

It is the duty and service of the Membership Committee to pass on all applications. It was also left up to the Membership Committee to look into the National Constitution and By-Laws and make a list of any additions or changes which they deem it wise to make.

Motion was made that a stag be given,—all members to pay their own expenses for same. An Entertainment Committee was appointed consisting of: Mr. A. B. Munchrath, E. F. Fredericks, and C. L. Hartman.

A Code Committee was then appointed to check into the various codes. Those appointed to serve on this committee are: Mr.

Frank Weatherly, Otto Balke and John Ven Horst.

A discussion was held with regard to an advance course of study. The Secretary was advised to write to the National Headquarters with regard to this course and was requested to find out how long it would take to answer the questions.

The business session being completed, President Fish introduced the speaker of the evening, Mr. Schwenk of the American Radiator Company, who gave a very interesting and educational talk on sweat tube fittings. This topic proved of great interest to the service men and engineers present. At the conclusion of Mr. Schwenk's talk, the meeting was open for discussion.

#### Meeting of March 26, 1937

This regular meeting of the chapter was called to order by the President, Mr. J. Lonnie Fish, after which roll call was taken. The minutes of the previous meeting were read by the Secretary, as well as the Treasurer's report.

All members stated their desire to take the Certificate Examination. Tuesday evening, April 6th, was set aside for this course. The Galesburg, Monmouth and Kewanee

**PROTECTION FOR THE SYSTEM with these new IMPERIAL STRAINERS**

**THESE** new Imperial strainers positively remove every trace of scale, compressor chips or dirt in the oil. Strainer No. 249-C has 17¾ sq. in. of mesh screen plus a closely woven asbestos cloth sack . . . and you can be certain that those fine particles, that do so much damage to valves, won't get by it.

Then there's the new No. 248-C—an inexpensive, small strainer that also does a mighty good job of getting out those damaging abrasive particles.

And the new No. 48-C is made of heavy brass forgings to prevent cracking and seepage. Special felt between two mesh screens. Large capacity for scale, chips and dirt.

**IMPERIAL BRASS MFG. CO.**  
1204 W. Harrison St., Chicago, Ill.

**WRITE FOR COMPLETE INFORMATION** on these strainers and other new Imperial products for service work.

The New 249-C sealed strainer with mesh screen and asbestos sack

The new No. 248-C small size sealed strainer

No. 48-C forged brass line strainer

**IMPERIAL Strainers** ORDER FROM YOUR JOBBER

**VALVES • FITTINGS • TOOLS • CHARGING LINES • FLOATS • DEHYDRATORS**

men are to take their examination at Galesburg in the Illinois Power & Light Corporation building at 7:30 P.M. on Tuesday evening, April 6th.

The constitution and by-laws of the National Society were accepted by the local chapter with the exception of the article with regard to the bond for the secretary and treasurer. This part of the article is to be omitted, but can be added at a later date if necessary.

Following the business session, the educational speaker of the evening, Mr. Barber of the Marathon Motor Company, was introduced by President Fish. Mr. Barber gave a very interesting talk on motors and how to place orders for same. Following the talk, a general discussion took place.

As this was the third meeting since the charter had been presented to the chapter, Mr. Barber gave a 1/2-h.p. motor to the member whose name was drawn. All the members wrote their names on a slip of paper and put them in a hat. These were shuffled and then Mr. Barber drew a name. The lucky man was Mr. I. W. Waage.

The Society appreciates very much the efforts put forth by Mr. Barber in attending the meeting to represent Marathon Mo-

tors, as well as his generosity in presenting the Society with the 1/2-h.p. motor.

It was decided to have a stag party following the business session of the next meeting to be held on Friday evening, April 9th, at the Davenport Hotel.

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## KANSAS CITY CHAPTER

Meeting of February 23, 1937

By R. E. KINGSOLVER, Secretary  
3830 Woodland Ave., Kansas City, Mo.

THE meeting was called to order by President H. L. Green, followed by roll call of members. A turnout of 80 men was recorded.

Mr. J. P. Leitner read a letter from National Secretary H. T. McDermott giving an outline of the objects of the Society so that prospective members would have a better understanding of the purposes of the Society.

The following men turned in their applications for membership in the Chapter: Mr. W. W. Brown, Floyd M. Ross and Al Fromholtz. Their applications were passed over to the Membership Committee for investigation.

Five members of St. Joseph Chapter, which is under formation, were present: Mr.

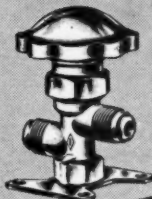
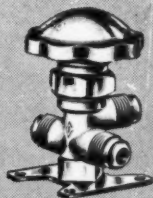
## —and now the new IMPERIAL "SYLPAK"!

IN THE greatly expanded 1937 line of Imperial products for refrigeration and air conditioning work is a complete new group of Sylpak Shut-off Valves. These valves have a shorter bonnet and fit in a 4-inch conduit box.

Built for tube diameters ranging from 1/4 to 3/8-inch for S. A. E. or solder fittings as desired. Brass forged body is non-porous, strong, and uniform, and has full size openings. Leak-proof metal seat.

Try these new Imperial Sylpak valves on your next job.

IMPERIAL BRASS MFG. CO.  
1204 W. Harrison St., Chicago, Ill.



Large size valves can also be furnished up to 1 1/2-inch female I. P. T. and 1 3/4-inch O. D. tube size. Pressure relief and emergency valves, evaporator suction valves, evaporator liquid valves, small service drum valves are other new items. Write for the new Imperial catalog on refrigeration and air conditioning specialties for service work.

# IMPERIAL Valves

FITTINGS • TOOLS • CHARGING LINES • FLOATS • DEHYDRATORS • STRAINERS

ORDER  
FROM YOUR  
JOBBER

E. J. Storm, H. E. Young, F. M. Pollock, Bruce Mercer and Mr. Bradford.

As there was to be an extensive educational program, the regular business was dispensed with.

The first speaker was Mr. R. A. Smith of the Penn Electric Switch Company. Mr. Smith brought with him the Penn display board and life size pictures of their controls to assist him in his lecture. Mr. Smith passed out screwdrivers with the compliments of the Penn Electric Switch Company.

The second speaker was Mr. D. D. Wile of the Detroit Lubricator Co. Mr. Wile gave a very interesting talk and demonstrated the operation of the thermostatic expansion valve.

#### Meeting of March 9, 1937

Mr. G. M. Paris turned in his application for membership.

President H. L. Green read two letters, one from the Alco Valve Company stating that they would be present for our March 23d meeting, and the other from the Mueller Brass Company asking to be represented at the earliest possible meeting.

The speaker of the evening was Mr. R. E. S. Geare of the L. H. Gilmer Company. Mr.

Geare gave a very interesting talk, going very much into detail on the construction of belts.

\*\*\*

### TWIN CITIES CHAPTER

Meeting of March 30, 1937

By J. SAMWAYS, Secretary  
4644 Clinton Ave., Minneapolis, Minn.

AT this special meeting, two speakers from the Thermal Service Company of St. Paul were presented by Mr. H. W. Small, president of that company.

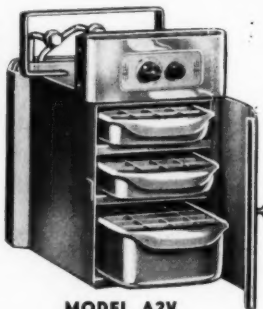
The first speaker, Mr. C. E. Hamilton, who is going to manage the Milwaukee branch of the Thermal Service Company, is a former member of Chicago Chapter of the R.S.E.S. Mr. Hamilton spoke on refrigeration in general and answered some of the questions which confront a service man.

Mr. Hackman, who is the Twin Cities salesman for the Thermal Service Company, spoke on railroad coach air conditioning. He briefly outlined the general systems used and gave the advantages and disadvantages of each. He also outlined some of the service troubles encountered.

## Every Day More Service Men Are Turning to PEERLESS "HUMIDI-PACK"

### SIX POINTS OF SUPERIORITY

1. Accelerated "down-draft" circulation. (Minimum dehydration of foods.)
2. Negligible frost build up on outside walls.
3. Easy removal of trays—due to less ice formation inside evaporator.
4. Beautiful finish—easy to clean.
5. Faster freezing of ice cubes.
6. High humidity is maintained.



MODEL A2V

### THE IDEAL HOUSEHOLD REPLACEMENT EVAPORATOR

Here is what one distributor said about the "Humidi-Pack" after seeing it in operation:

"This unit has been running for about thirty-six hours and there has never been one demonstrated in any way comparable."

Hundreds of others have found out the same thing. Investigation will profit you. Literature upon request.

## PEERLESS of AMERICA, Inc.

ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE COMPANY

NEW YORK FACTORY  
43-20 34th Street  
Long Island City

MAIN FACTORY—GENERAL OFFICES  
515 West 35th St.  
Chicago

PACIFIC COAST FACTORY  
3000 South Main St.  
Los Angeles

## "THE CONTRIBS' COLYUM"

By "THE KINGFISH."

SO Harry Busby has moved back to Chicago again.

Paul Jacobsen was in Chicago the other day and stopped at the office, McDermott reports. It seems as if he is going to get a chapter started in Central Indiana where he is located now.

We have a new member in Athens, Greece, from the Hipp. Th. Lychros Co. there. We wonder what a housewife over there says when her refrigerator breaks down.

W. H. Moss, our vice-president, goes to New Orleans to start a chapter there. It is difficult to keep track of all the new chapters popping up.

Willis Stafford resigns from Western Gas & Electric Co. and goes in business for himself.

June Brunton wants to join a ladies

auxiliary, and not even a chapter in Huntington. Claude had better get busy. West Virginia needs a chapter, Claude.

We wonder who will be the first President of the state organization of the R. S. E. S. in Ohio.

Wonder how Mrs. Skipple is getting along. We haven't heard a word from her for a long time.

We don't know of a more pleasant sound than the soft "purr" of a good ice machine after a thorough overhaul.

Who is "MOMSIE"? We heard that some lady in Chicago had that nickname. Will she please write in and identify herself?

Welcome to Bruce Hale and his Montgomery, Ala. chapter.

Three cheers for the Mississippi Valley boys.

We haven't heard from Ed Wright lately.



### This Modern Factory Builds Genuine Copeland Parts for You

• New modern precision machinery and skilled craftsmen now build Copeland Refrigerators and refrigerating units even finer and more trouble-proof than ever before. But, like any mechanism, there are times when Copeland

units need attention, or when parts need replacement. And when such an emergency arises, you, as a service engineer, want quick, fast, friendly service. That is the kind of service we are pledged to give you.

# COPELAND

REFRIGERATION CORPORATION, DETROIT, MICHIGAN

Our "better half" wishes that November was here soon. She says we do not have enough conventions.

This is the time of the year we get spring fever, and would like to go places, but the ice machines get spring fever also and refuse to go places and do things so we shall have to stay and nurse the poor things through another nice, and we hope, real hot summer.

Here's greetings to the Ladies Auxiliary in Memphis and to their Chairlady, Margaret Bridges. We remember you ladies as charming hostesses and are looking forward to seeing "you all" in Chicago next November 3-4-5 at the Stevens Hotel.

How many of us remember the days when small ice machines were just "put together,"—no service valves or other conveniences as we know them today. How many of us have tried to make an air-cooled "Nizer" run quietly, knowing that we had ten calls on other machines waiting?

## NEW TRANSFER SIGN READY

A NEW membership emblem which can be applied to either shop or office window, or service truck, is now available for members of the R.S.E.S.

It is attractively produced in four colors and is six inches in diameter. It is a decalcomania transfer, and complete directions are given as to its application for either window or truck.

It is a distinctive identity as to your membership in the Society, and can be procured from National Headquarters at fifty cents each.

\*\*\*

## ORGANIZATION IS THE WAY TO ATTAIN AIMS OF INDIVIDUALS

By W. HALL MOSS,  
1st Vice-President, R.S.E.S.

ORGANIZATION provides a way for those who are engaged in the same profession or industry to work cooperatively and collectively to gain objectives which each, as individuals, desire but which are



Snap-on Tools, Inc.  
Kenosha, Wis.

- ☐ Free literature.  
☐ Demonstrate Flaring Tool A 75.

Name .....

Address .....

.....RSE-4



## Snap-on

### SPECIALIZED TOOLS FOR REFRIGERATION SERVICE

- Flares tubes of six different sizes—you'll want one of these!

Does not have to be taken apart to insert or remove the tube either before or after the flaring operation. Automatically centers in each of the six tube size positions. Knurling inside gripping holes prevents tube from slipping during the flaring operation. A roller type flaring bit rides freely on the pressure screw and eliminates all danger of splitting the tube while it is being flared. All parts machined to precision and heat treated to give the greatest strength and durability. Quality built throughout to give years of satisfactory service. Has  $\frac{1}{2}$ ",  $\frac{3}{8}$ ",  $\frac{5}{16}$ ",  $\frac{1}{4}$ ",  $\frac{3}{16}$ ",  $\frac{5}{8}$ " tube gripping openings.



beyond the individual's reach separately. Such is the offering made by the REFRIGERATION SERVICE ENGINEERS SOCIETY to all those engaged in the field of refrigeration.

It is my wish to call the attention of all service men to this fact, for strictly speaking, the size of an organization determines its ability to accomplish the objects of its members. The larger it grows, the more respect it will gain from those with whom it normally collaborates; the greater prestige it will have; the broader its scope of operations will become; the more effective will be the accomplishments achieved; and the greater will be its ability to defray the cost of attaining the objects for which it was organized—the success of its individual members.

#### Constructiveness Is Essential

Organization will do those things enumerated in the above paragraph provided its objects are constructive and are conducive to the best interests of not only the members of the organization, but those who serve the members and to those whom the members serve.

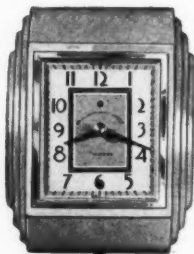
It is essential that the objects and policies

of an organization be set forth in definite terms,—always giving due consideration to the manufacturer of equipment and parts, to the jobber and dealer who supplies such equipment and parts and above all else due consideration for the user of such equipment and parts, for it is thus that the objective is reached and the members of the organization attain their benefits. Whether this be accomplished by distribution of literature or letters showing the aims, constitution and objects of the organization, or otherwise, makes no particular difference,—just so these are placed before the service man, dealers, distributors, manufacturers, and customers. Those who wish to become members are entitled to the information; those in allied branches must of necessity be familiar with the objects in order that they may be guided in their relationship with the organization.

#### Program Is Necessary

To achieve the quickest and best results—all members are anxious for these—an organization should set up a program of development and then proceed on that program as rapidly as it is possible to do so,

## \$75<sup>00</sup> PER MONTH AND NOTHING TO BUY



WALL MODEL

Here is a money making proposition for every Service Man, with no investment required. Just install the new FROSTOFF Units on Electric Refrigerators and not only make extra profits, but have more satisfied customers. We have over 25,000 Units now in operation which will give you an idea of the possibilities of our proposition.

WRITE US NOW FOR FULL INFORMATION

## FROSTOFF COMPANY INC.

250 East 43rd Street

NEW YORK CITY

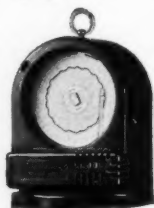
## PRACTICAL

### Recording Thermometers Motor Operation Recorders

are the service engineer's  
best trouble shooters

• You can afford to use these instruments and they will help you on every job. Try one under our 15 Day Trial plan. Note these Practical features: Portable, strongly built. Give 24 hour record in ink. Mechanism built in door, so it swings out of harm's way when changing charts. Carrying case, 25 extra charts, bottle of ink furnished free. Write today for prices and 15 Day Trial offer. Address: Dept. G, Practical Instrument Co., 2717 N. Ashland, Chicago.

ASK YOUR JOBBER



PRACTICAL *Recording Thermometer*

## IT IS READY FOR YOU

**OUR NEW LARGE 1937 CATALOG OF REFRIGERATION AND AIR CONDITIONING—PARTS—SUPPLIES—TOOLS—EQUIPMENT. MANY NEW ITEMS.**

Write for it on your letterhead or send your business card. We sell only to the wholesale trade.

**H. W. BLYTHE  
COMPANY**

**2234-38 South Michigan Ave.  
CHICAGO, ILLINOIS**

as determined by the size of the organization and the finances at its command.

Too strict limitations on membership at the outset immediately places a limit on its accomplishments. While, on the other hand, without the restrictions, the organization will have a larger membership and a much better cross-sectional view of the profession from all standpoints, thus enabling it to establish standards by which the membership may be restricted to those who qualify. This point is especially applicable in the forming of new local chapters. For there is no doubt that those who may not have been up to standard when they joined the organization will fall into two classes; they will improve themselves or correct their methods so that they will become qualified for membership, or they will see the fallacy of trying to carry on in the face of the progress that is being made and will fall out voluntarily, taking up as a rule some vocation to which they are better suited.

We know that an organization, in order to justify its existence, must consider the welfare of three groups: its members, those serving its members, and those whom the members serve.

*The R.S.E.S. fulfills all of the above. Let us have your membership. We need you and you need us.*

\*\*\*

### 1937 OFFICERS FOR CLEVELAND CHAPTER

THE following officers of Cleveland Chapter have been elected for 1937:

O. D. Sipple, *President*;  
L. E. Gardella, *1st Vice-President*;  
Wm. Meder, *2nd Vice-President*;  
K. P. Wall, *Secretary*;  
K. L. Debes, *Treasurer*;  
Geo. J. Schuld, *Sergeant-at-Arms*;  
E. E. Vadakin, Walter E. Wright and Warren W. Farr, *Board of Directors*.

\*\*\*

## Buckeye Brev's

By THE RAMBLER

THIS is our introduction of a column of Ohio Chapter News. As you all probably know, the nickname of Ohio is the Buckeye State and "Brev's"—if you haven't already guessed—is for brevities.

Having satisfactorily failed in an examination covering the writer's education, writ-

ing ability, mentality, and morals, and having thereby convinced the examining board that we know practically nothing about a great deal, we have been granted a Journeyman's card in the "Kolyum" Guild. We therefore take great pleasure in presenting this newcomer to the field of "Colyunning." We will advise you on subjects about which we know the least, solve your service problems in one easy lesson, advise you on your domestic difficulties, and make ourselves as objectionable as we know how. Hold your hats, boys, here we go!

**FLASH!** Aspirin Combine offers to finance another Memphis Convention. Their Ohio business has been swell since the last one.

Maybe we're old fashioned, but down here in Ohio we object to the language that the Kingfish used in his March "Kolyum." We particularly object to the words Schiedamske Dejk. While we're a little vague as to the meaning, we are sure that such words couldn't be nice. Some of our wives saw that, and we haven't been able to get out to go to a meeting since. Can't something be done?

While we're on the subject we might as well mention that we don't think that the reference to the hue of one's undergarments was quite delicate. This occurred in Views & Reviews. Shame on you, Herman! (By the way, Joe, where'd your wife get 'em?)

Mr. and Mrs. Buckeye take great pleasure in announcing a "blessed event," born in Columbus, Ohio, on Feb. 25th. This is the Buckeye's fifth child, the others being Akron, Youngstown, Cleveland, and Cincinnati. Mr. and Mrs. Buckeye are now leading in the R.S.E.S. "Baby Derby."

We have just heard a rumor that the Chicago Chapter doesn't intend to make good on its promise, made at Memphis, to furnish free board and lodging and allow transportation expenses both ways to the Chicago Convention. Just another campaign promise. There "oughtabealaw."

In order to successfully compete with other columns in giving advice on how to run your business, we spent a whole evening reading articles on how to succeed. Some of these were written by "sure-nuff" professors with a whole alphabet after their names.

SERVICE ENGINEER

## What You Want When You Want It!

**EXTRA DRY ESOTOO**  
**VIRGINIA SMELTING**

(Liquid  
Sulphur Dioxide)

**V-METH-L**  
**VIRGINIA SMELTING**

(Virginia  
Methyl Chloride)

**prompt deliveries  
from 72  
distributing points**

In many cases, quick delivery is the thing you're after. That's one reason for the great popularity of Virginia Smelting Company's ESOTOO (liquid sulphur dioxide).

Not only is this refrigerant "tops" in its field, but it is promptly delivered from 72 distributing points the world over.

Next time you're in need of a perfect refrigerant *quickly*, call for ESOTOO. You'll be completely satisfied with the product . . . and more than pleased with the fast delivery service that goes with the deal.

The coupon will bring you interesting information.

**VIRGINIA SMELTING CO.**  
**West Norfolk, Va.**

I am interested in receiving free literature on electrical refrigeration.

Name .....

St. and No. ....

City..... State.....



## REFRIGERATION SATISFACTION

*Begins*  
**IN THE LABORATORY**

To insure accurate, satisfactory performance of Ansul refrigerants, trained technicians and a vast amount of technical apparatus are employed to constantly check and re-check refrigerants which are going to the trade. You can be sure that every drop of Ansul Sulphur Dioxide and Ansul Methyl Chloride which leaves our plant is as perfect for refrigeration purposes as we can make it. In fact, we attach a guaranteed analysis tag to every cylinder for your own inspection.



**ANSUL CHEMICAL CO.**  
**MARINETTE WISCONSIN**

April, 1937

But after looking up all the words in the dictionary, we were forced to conclude that the old idea of giving full value, plus hard work, and a reasonable degree of luck, was just being dressed up in a lot of words.

Anyway, this is our afternoon off, so let's drop in on all that detail.

\*\*\*

### NEW HENRY DRYERS AND STRAINERS

**H**ENRY VALVE COMPANY, 1001 N. Spaulding Ave., Chicago, have announced a number of new additions to their large line of dryers and strainers. Of particular interest is the Type 733 Dehydrator-Strainer, a combination dehydrator and strainer with asbestos sack. The dehydrant is located inside the asbestos sack, which in



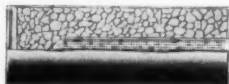
TYPE 733 DEHYDRA-STRAINER

turn is supported within a fine mesh brass screen. The unit is also equipped with a perforated dispersion tube, standard equipment on all except the smaller sizes of Henry Dryers. The tube exposes the entire volume of dehydrant to penetration by the refrigerant and maximum drying efficiency with minimum pressure drop is obtained. The brass shell is 2 inches O. D. and 12 inches long.



TYPE 744 CARTRIDGE DEHYDRATOR

The cartridge dehydrator can be easily replaced by removing the old cartridge and replacing it with a new one. A strong spring provides positive tight sealing action of dispersion tube on inlet fitting, preventing bypassing of refrigerant between outside of cartridge and inner surface of dehydrator. Has 2 inch O. D. flange brass shell. Three



TYPE 74 REFILL CARTRIDGE FOR  
TYPE 744 DEHYDRATOR

sizes with dehydrant capacity up to 41.5 cubic inches are available.

The refill cartridges with dispersion tubes are furnished in all sizes required for Type 744. Units are packed in moisture proof containers. The trade is given its choice of four dehydrants: Drierite, activated alumina, calcium chloride and calcium oxide at the same price.



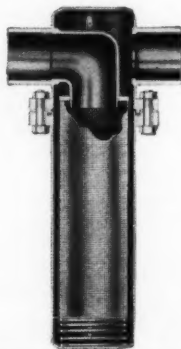
TYPE 709 DEHYDRATOR

This unit is intended only for household or the smallest sizes of commercial systems. Shell, one inch O. D. by five inches long. Dehydrant capacity is 3.5 cubic inches. Has soldered end caps.

#### Henry Strainers

According to the manufacturer all Henry Strainers are designed so as to have much more free and effective screen area than is actually required for the maximum recommended refrigerant tonnage passing through a line of diameter, corresponding to the largest size of fitting used with any one particular strainer. The manufacturer states that negligible pressure drop, compactness and positive sealing of screens to prevent by-passing are other features of design incorporated in these strainers.

This angle type strainer is for use with copper pipe. The design prevents trapping of oil and permits quick removal of the screen for cleaning. Pressure drop is negligible and screen area is large. A spring tension provides the seal of screen against




TYPE 877 STRAINER WITH SOLDER FITTINGS





**Thermostatic  
Expansion  
Valves are  
Easy to  
Disassemble  
and Clean**



**Parts Drop Into Your Hand by  
Removing Large Hexagon Nut  
at Bottom of Valve . . .**

Simplicity in design and operation is an outstanding feature of  Thermostatic Expansion Valves. All the operating parts that might need inspection or cleaning will drop into your hand when you remove the large hexagon nut on the bottom of the valves.

Each part is built with precision. The assembled valve is tested, stored in 110° room for three weeks and retested at 400 lbs. pressure, as a result, no  valve has ever been returned with a broken diaphragm!

*Progressive jobbers everywhere stock  Thermostatic Expansion Valves.*



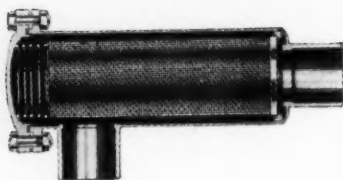
**AUTOMATIC PRODUCTS COMPANY**

2454 NORTH THIRTY-SECOND STREET

MILWAUKEE



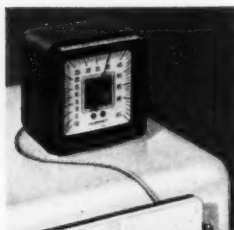
WISCONSIN



TYPE 866 STRAINER WITH SOLDER FITTINGS

the tapered ring at the inlet end. Fitting sizes: five-eighths inch to  $2\frac{3}{8}$  inches O. D.

A horizontal type also to be used with copper pipe. Has removable screen which can be taken out for cleaning without removing strainer from line. May be installed in horizontal position or, if minimum oil trapping is desired, the strainer can be installed on its side. Has flanged brass shell. Fitting sizes five-eighths inch to  $1\frac{3}{8}$  inches O. D.



**The handiest tool in the kit—**

For all service jobs—checking switch action, answering complaints of too high or too low temperatures—checking brine tanks and vessels, servicing household refrigerators, commercial boxes, cold storage jobs. Also valuable in selling refrigerators, making surveys of cooling jobs, etc.

WRITE FOR NEW REFRIGERATION CATALOG

## Announcing the **MARSH "Serviceman"**

REFRIGERATION SERVICE THERMOMETER  
—why GUESS when you can KNOW

More and more it is becoming apparent to service men and distributors that the only correct and convincing reading of refrigerator temperature is made under actual working conditions with the refrigerator closed. The new Marsh "Serviceman" has been built to supply this need for a compact, versatile service thermometer, sturdy and accurate, yet modestly priced with plenty of capillary tubing for reaching any desired point of testing. Its clear dial with big divisions is easily read. There is no guess work as when an ordinary pocket thermometer is used. You know—and so does the customer!

### "Recalibrator" assures lasting accuracy

The "Serviceman" is guaranteed accurate within one degree. If it is knocked out of adjustment, you simply place the bulb in cracked ice and water, and turn the "Recalibrator" screw until the pointer records 32°. It will then be right at every point on the dial. This is not the conventional pointer resetting device which is always subject to error. It is a real re-calibration—an exclusive feature of Marsh Instruments. Modern facilities and volume production make it possible to sell this finely built, precision instrument (in ranges of  $-10^{\circ}$  to  $+65^{\circ}$  F. \$5.00 or  $-10^{\circ}$  to  $+100^{\circ}$  F.) at a dealers net price of . . . . . (Minus 20° temperature range at slightly higher price.)

**JAS. P. MARSH CORPORATION**

2059 SOUTHPORT AVENUE, CHICAGO

**PARTS  
SUPPLIES TOOLS**

**FREE  
CATALOG AND BUYERS GUIDE**

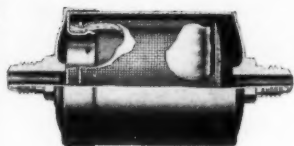
### EVERYTHING YOU NEED FROM ONE SOURCE

No matter what parts, supplies or tools you may need for any type of refrigerator or air conditioner, our COMPLETE LINE can meet your requirements promptly. And it's all QUALITY MERCHANDISE. When you deal with Airol you know you can absolutely rely on getting exactly what you order. Airol prices are the very lowest rock-bottom wholesale prices obtainable. You get the benefit of our large volume and careful buying. Orders are shipped the same day received. WRITE FOR NEW, COMPLETE CATALOG. It's FREE.

**AIRO SUPPLY CO.** 2732 N. Ashland Ave., Chicago  
17 W. 60th St., New York



Fitting  
O. D.  
ed with  
which  
out re-  
nstalled  
um oil  
be in-  
s shell.  
inches



TYPE 895 STRAINER

This is a soldered shell strainer with asbestos sack and is used where an exceptional degree of filtering is required. Made with a drawn brass shell with soldered inlet cap. Due to the relatively large area of sack, a large amount of foreign matter can be collected before cleaning is necessary. Asbestos sack is supported inside of fine mesh screen cylinder. Shell  $2\frac{1}{2}$  inches by 2 inches O. D. Screen area is 11 square inches.



TYPE 885 SMALL STRAINER

This small strainer is recommended for use only in connection with household refrigerators or smallest commercial systems. Made with a soldered brass shell, three-quarters inch O. D. by  $4\frac{3}{4}$  inches long. Has 120 mesh screen with a screen area of  $6\frac{3}{4}$  square inches.

The complete line of Henry dryers and strainers, as well as large shut-off valves, relief valves and service tools for "Freon," methyl chloride and sulphur dioxide is described in the new catalog 62, which may now be obtained from the manufacturer.

Large sizes of check valves, relief valves, liquid gauge sets and three way dual control valves for the aforementioned refrigerants are described in the new Henry Ammonia Valve and Forged Steel Fitting Catalog 47, which is also now ready for distribution.

## HERMAN GOLDBERG CO.

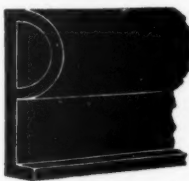
### MOVES TO NEW LOCATION

THE Herman Goldberg Co., manufacturer's agent has moved to new quarters at 9 S. Clinton St., Chicago, in the Madison Terminal Bldg., directly across from the North Western railroad station.

### CLASSIFIED ADS

GLASS FOR INSULATION—Ultra modern—Fireproof—Permanent. Sales territories available to those whose experience and ability qualify them. Write for particulars. Armor Insulating Company, Atlanta, Georgia.

## REFRIGERATOR DOOR GASKETS



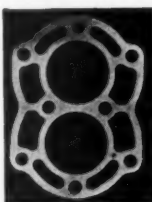
Jarrow gaskets for replacement assure you the same quality and fit the manufacturer originally embodied.

Insist on Jarrow replacement.

### JARROW PRODUCTS CORP.

420 N. LaSalle St.

Chicago, Ill.



Pioneers and Specialists in

## GASKETS for ELECTRIC " " REFRIGERATION

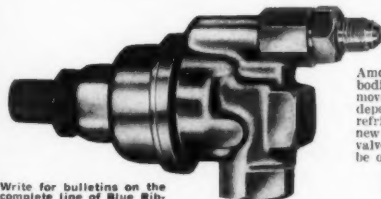
offer you Metallic Gaskets that hold regardless of what your refrigerant may be and will not shed particles of material to clog up important working parts in a machine. A metal that will not "creep." Once tight it will stay "tight."

Send for catalog

CHICAGO-WILCOX MFG. CO.  
7701 S. AVALON AVE., CHICAGO, ILL.

## NEW and EXCLUSIVE FEATURES ENGINEERED INTO

### These Type "A" Automatic EXPANSION VALVES



Among the outstanding features of these valves are forged bodies—live rubber, easily removable breather caps—removable needles and seats. These valves are rugged, dependable, highly efficient and interchangeable with all refrigerants. The added features contribute greatly to a new standard of valve performance. Frankly, no finer valve has ever been offered to the industry, nor can they be out-performed in any comparable service.

### AMERICAN INJECTOR COMPANY

1481 14th St. Detroit, Mich.

Write for bulletins on the complete line of Blue Ribbon appliances

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It's plus business that is easy to get. Easy to handle, too, if you rely on Miller. You can service 80% of all refrigerators made to date from

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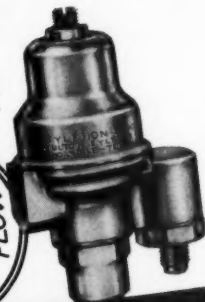
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**Miller**  
"Engineers in Rubber"

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Because the non-metallic, corrosion-proof poppet and seat (see detail sketch), in this new Sylphon Automatic Expansion Valve cannot corrode and pit, it always closes off positively, maintains constant pressure, for long periods and without attention. Poppets are renewable, on the job. Filters are ample in size, readily removed. Moisture-proof . . . no rubber breather cap. All wearing parts renewable. For original equipment and for replacement service on Sulphur Dioxide, Freon or Methyl Chloride systems. Bulletin V-5000.

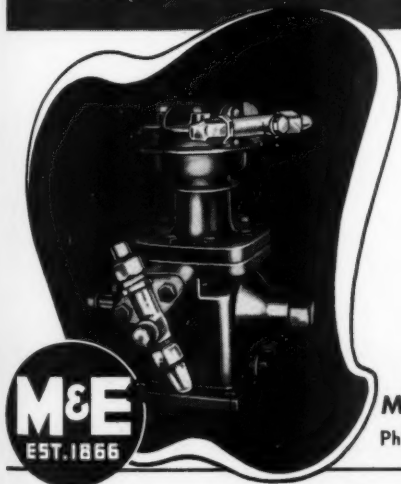
*Sylphon*  
TRADE MARK



## AUTOMATIC EXPANSION VALVE

FULTON SYLPHON COMPANY, Refrigeration Division  
Knoxville, Tennessee

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All types for service replacement and new installations . . .

One, two and four cylinder models from  $\frac{1}{4}$  h.p. to 20 h.p.

. . . For Sulphur Dioxide, Methyl Chloride or Freon.

Write for new catalog—a valuable reference for assemblers and service companies.

**MERCHANT & EVANS COMPANY**  
Philadelphia, Pa., U.S.A., Plant at Lancaster, Pa.

# NEW HENRY Dryers, Strainers and Valves

The Advanced Design and Large Capacity Range of Henry Products are in step with the rapid Progress of Refrigeration and Air Conditioning

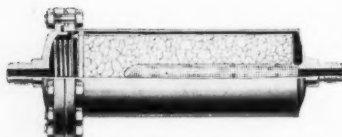
THE MOST  
COMPLETE LINE  
IN THE  
INDUSTRY

## DRYERS

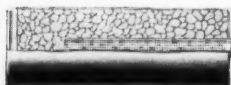
There is a type of Henry Dryer for every installation requirement. An exclusive feature of design is the integral liquid sight port, supplied with certain types. All but smallest sizes have dispersion tubes. Choice of 5 dehydrants AT THE SAME PRICE.



Type 733 Dehydra-Strainer



Type 744 Cartridge Dehydrator



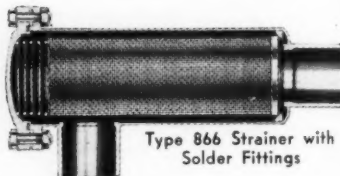
Type 74 Refill Cartridge  
for Type 744 Dehydrator



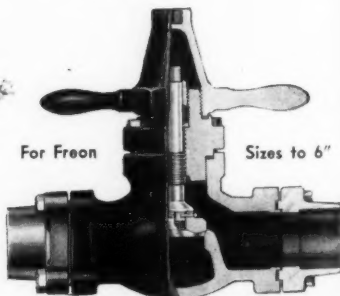
Type 885 Small Strainer

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Type 866 Strainer with  
Solder Fittings



For Freon

Sizes to 6"

Wing Cap Valves

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No. 62, Dryers, Strainers, Valves and Service Tools.

No. 47, Henry Ammonia Valve and Forged Steel Catalog.

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1005-17 North Spaulding Avenue

CHICAGO • ILLINOIS



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**FOR REFRIGERATION • OIL BURNER • AIR CONDITIONING  
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REVERE "Dryseal" Copper Tube is made of pure, deoxidized copper, soft annealed for easy flaring and bending. Mirror finish interior produced by an extra finishing operation. Soft, uniform temper and fine, even grain structure assured by careful electrical heat treatment. It is free from oxide—every inch bright, smooth and dry. Comes in 9 sizes ranging from 1/8" to 3/4" O.D. Wall thickness, 0.035". Either plain copper or tinned. Sizes 1/4", 5/16", 3/8" and 7/16" are listed under the

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## Revere Copper and Brass

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*a New*

# LOW PRICED

*line*

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**N**EW FEATURES are seldom combined with new low prices. Minneapolis-Honeywell, however, now offers its new line of low priced refrigeration controls, which, among other advantages, include wider range, smaller differential and a new type of underslung mercury switch construction, giving a considerably more definite switching action. These new controls meet all refrigeration requirements up to  $\frac{3}{4}$  h.p., yet are priced much lower than you would ordinarily expect. They are Minneapolis-Honeywell quality throughout and incorporate exclusive Minneapolis-Honeywell advantages such as visible scales and leveling device at no extra cost. The Minneapolis-Honeywell representative in or near your city will gladly explain their advantages, or you may write for full information. Minneapolis-Honeywell Regulator Company, 2934 Fourth Ave. So., Minneapolis, Minn.

Dependable Controls Cost Less Than Service



AUTOMATIC CONTROL  
MH

### MINNEAPOLIS-HONEYWELL

Control Systems

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